

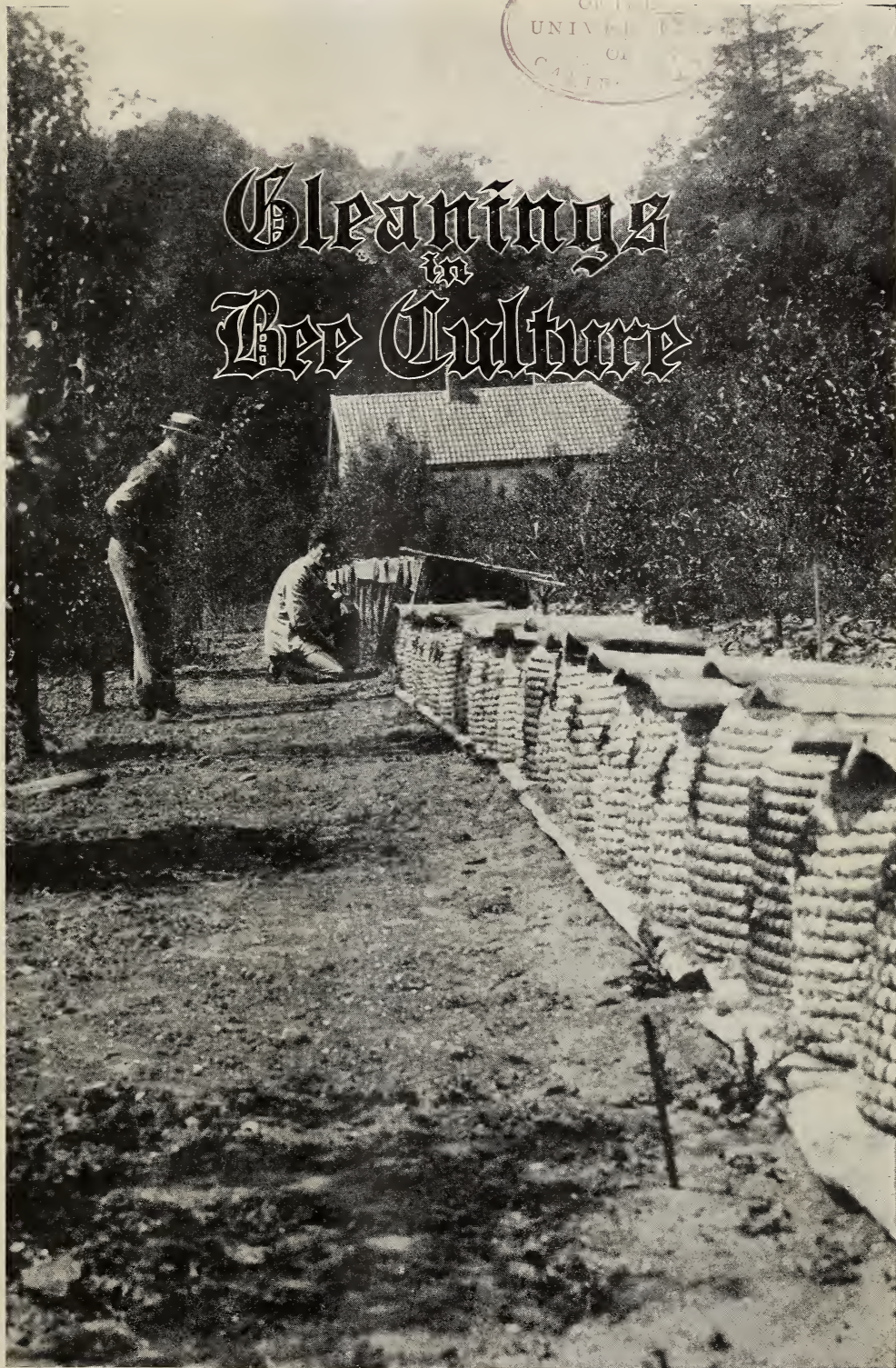
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

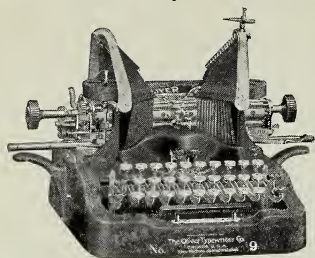
LIBRARY
JUN 23 1916



Cleanings in Bee Culture



You Can Pay 17c a Day



The largest typewriter concern in the world offers you the best typewriter in existence for 17 cents a day.

This certainly places a premium on pennies! It recognizes honesty as a commercial asset.

The — No **9**
OLIVER
The Standard Visible Writer

Its record has never been equaled.

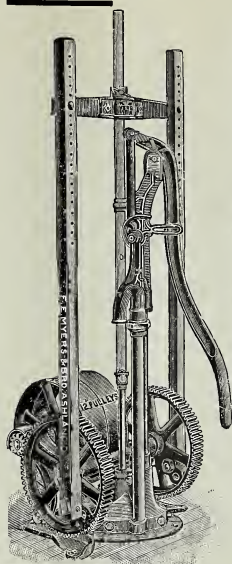
Catalog free.

Oliver Typewriter Co.

946 Prospect Avenue, Cleveland, Ohio

You can rent an Oliver three months for \$4.00.

MYERS JACKS



A Myers Pump, a Myers Jack, and a Gasoline Engine furnish a dependable water supply for the average requirements.

Myers Jacks are easy to connect to any windmill head pump, without disarranging the pump or pipes in any manner. They are neat in design, well proportioned, and sturdily built. The side arms are steel or tough wood and so constructed that the cross-head can be raised or lowered to suit different height pumps. The gears are machine-cut. These are some of the reasons that Myers Jacks are favorites.

Write for circular showing all styles including the new type for operation by electric motor.

F. E. Myers & Bro., Ashland, Ohio

No. 351 Orange Street

**Bee
book
free**

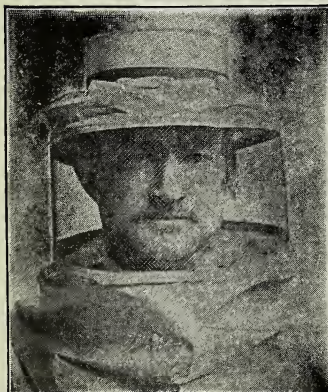
YOUR SUCCESS IN BEEKEEPING DEPENDS ON the kind of bees you keep and how you handle them.

Blanke's 68-page book is not merely a catalog; it is an authoritative expert guide on the kind of apiary supplies that successful beekeepers have proved to be *profitable* in actual use. Blanke carries the largest stock of bee supplies west of the Mississippi, and can make prompt delivery. Every article carried is perfect fitting. Whether you're a beginner or an expert beekeeper, you ought to get the Blanke Bee Book — send for it today.

Fine Poultry Book also Free

If you keep poultry too, ask us for illustrated poultry book; full of valuable pointers on poultry-raising as well as a catalog of profitable poultry supplies.

BLANKE MFG. & SUPPLY CO., Pioneers in Bee, Poultry, and Dairy Supplies, 207 Washington Ave., ST. LOUIS, MO.



By All Means Buy a Good Veil

Muth's Ideal Bee-veil, postpaid 75c; with other goods, 70c.

OLD COMB AND CAPPINGS rendered into wax with our hydraulic wax-press. Perfect work. We buy your wax at highest market price. Write us.

THE FRED W. MUTH CO.

204 Walnut Street

Cincinnati, Ohio

EMBARGO ON BEE SUPPLIES

Pennsylvania, New Jersey, New York, and New England states beekeepers should not delay putting in their stock of supplies as early as possible. The eastern railroads are so heavily laden with freight it is indefinite as to just how long it will take to receive goods after they leave the factory or dealer. Ordering your requirements a month earlier than usual will cost no more, and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

As never before we are especially prepared to take care of the beekeepers' orders and give prompt service. Above all, we assure the purchaser of satisfaction, and we never consider a deal closed until we feel sure our customer has received the guarantee of satisfaction which goes with every package, crate, or box leaving our factory.

Those beekeepers who have not received a copy of our new RED CATALOG should not hesitate to send for a copy. It gives descriptions and prices of all the beekeepers' supplies, from the requirement of the smallest to that of the largest beekeeper. A postcard will bring it to your address free.

Read Catalog, postpaid.

Dealers Everywhere.

"Simplified Beekeeping," postpaid.

W. T. FALCONER MFG. COMPANY, FALCONER, NEW YORK

where the good beehives com from.

HONEY GRADING RULES

GRADING RULES OF THE COLORADO HONEY-PRODUCERS' ASSOCIATION, DENVER, COL.,
FEBRUARY 6, 1915.

COMB HONEY

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped except the outside row next to the wood. Honey, comb, and cappings white, or slightly off color; combs not projecting beyond the wood; sections to be well cleaned. No section in this grade to weigh less than 12½ oz. net or 13½ gross. The top of each section in this grade must be stamped, "Net weight not less than 12½ oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER ONE.—Sections to be well filled, combs firmly attached, not projecting beyond the wood, and entirely capped except the outside row next to the wood. Honey, comb, and cappings from white to light amber in color; sections to be well cleaned. No section in this grade to weigh less than 11 oz. net or 12 oz. gross. The top of each section in this grade must be stamped, "Net weight not less than 11 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER TWO.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 oz. net or 11 oz. gross; also of such sections as weigh 11 oz. net or 12 oz. gross, or more, and have not more than 50 uncapped cells all together, which must be filled with honey; honey, comb, and cappings from white to amber in color; sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

Comb honey that is not permitted in shipping grades

Honey packed in second-hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured, or patched-up sections.

Sections containing honey-dew.

Sections with more than 50 uncapped cells, or a less number of empty cells.

Sections weighing less than the minimum weight.

All such honey should be disposed of in the home market.

EXTRACTED HONEY

This must be thoroughly ripened, weighing not less than 12 pounds per gallon. It must be well strained, and packed in new cans; sixty pounds shall be packed in each five-gallon can, and the top of each

five-gallon can shall be stamped or labeled, "Net weight not less than 60 lbs."

Extracted honey is classed as white, light amber, and amber. The letters "W," "L A," "A" should be used in designating color; and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new substantial cases of proper size.

STRAINED HONEY

This must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained; and, if packed in five-gallon cans, each can shall contain sixty pounds. The top of each five-gallon can shall be stamped and labeled, "Net weight not less than 60 lbs." Bright clean cans that previously contained honey may be used for strained honey.

Honey not permitted in shipping grades.

Extracted honey packed in second-hand cans.

Unripe or fermenting honey weighing less than 12 lbs. per gallon.

Honey contaminated by excessive use of smoke.

Honey contaminated by honey-dew.

Honey not properly strained.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES

Adopted at Cincinnati, Feb. 1913

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH

1. *Extra Fancy.*—Sections to be evenly filled, combs firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than six unsealed cells on either side, exclusive of the outside row.

3. *No. 1.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2.*—Combs not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT.

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour, or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

ST. LOUIS.—The demand in this market for comb honey has been very light, and not enough selling to make firm quotations. Extracted honey has been in good demand, and we believe this market is almost cleaned up of last year's stock, and new honey will meet with a good demand. No. 1 bright amber comb honey is bringing \$3.00 per case; No. 2, \$2.50 per case; under grades, less. Southern extracted honey, amber, in barrels brings from 6 to 6½; in cans, 7 to 7½; dark, ½ to 1 ct. per lb. less. Beeswax is firm at 30½ for prime; impure and inferior, less.

R. HARTMANN PRODUCE CO.

St. Louis, June 6.

ALBANY.—Very little honey is moving on this market now. The extracted honey is all sold, and some comb honey unsold. This is the off month for this market. Demand will not begin again until August. Beeswax brings 28 to 30.

Albany, June 5.

H. R. WRIGHT.

CHICAGO.—Very little honey has been sold during the past two or three weeks. Comb honey is selling at 12 to 13 for the white grades, and ambers from 1 to 2 cts. per lb. less. Extracted brings 7 to 8 for the white grades, and 6 to 7 for ambers. Beeswax brings 30 to 32, according to color and cleanliness.

Chicago, June 5.

R. A. BURNETT & Co.

INDIANAPOLIS.—Comb honey as well as extracted is moving very slowly at this time. This, of course, is due to the weather conditions. Comb honey is selling from \$3.50 to \$4.00 per case. Extracted is bringing 9 to 11 cts. We are paying producers 28 cts. cash or 30 in trade for good average wax delivered here.

Indianapolis, June 5.

WALTER S. POWDER.

DENVER.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: No. 1, per case of 24 sections, \$2.93; No. 2, \$2.70. White extracted, 8½ to 8¾; light amber, 8 to 8¾; amber, 7 to 8. We pay 26 cts. per lb. in cash and 28 cts. per lb. in trade for clean yellow beeswax delivered here.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION.
Denver, Col., June 6.

F. Rauchfuss, Mgr.

ZANESVILLE.—Honey is in pretty good demand, with quotations practically unchanged. Locally stocks, except western, are pretty well cleaned up. With normal weather conditions there will be better than an average crop of white-clover honey in the north-central states. While the market may remain firm for a time, some weakening after, say, thirty days would not be surprising. Comb is selling at \$4.00 a case down, according to quality and quantity. Extracted is in limited demand, with prices 9 to 11. For beeswax, 29 cts. cash, 31 in trade, is offered for good average grades.

Zanesville, June 5.

E. W. PEIRCE.

KANSAS CITY.—There has been no new honey on the market. There are a few cases of honey, No. 1 selling at \$2.75 to \$3.00, and some No. 2 stock selling at \$2.50 to \$2.75. This stock is showing a more or less candied condition. The demand for extracted honey is better. The market seems to be cleaning up quite rapidly, prices ranging from 6 cts. for dark amber to 7½ for real light amber. There is no strictly white extracted honey on the market. Beekeepers report the condition of the bees good, and the outlook is for a good flow of honey.

C. C. CLEMONS PRODUCE CO.

Kansas City, June 5.

Watchful Waiting Causes You to Get Left

So Buy your Bee Supplies Now.

Promises to be a Honey year. Ship on day of receipt of order.

Lewis' Beeware—finest in the world.

Send for our 1916 Catalogue.

We do Beeswax rendering. Ship us your old Combs and Cappings. Write for prices.

THE FRED W. MUTH CO.

204 Walnut St.

THE BUSY BEE MEN.

CINCINNATI, O.

Queens! Queens! Queens!

We will make a specialty of shipping Queens, Nuclei, and Full Colonies from Florida during the present month. We are breeding from queens that produced a surplus of 300 pounds per colony in a 24-day honey-flow in Florida, and that are unexcelled for prolificness, gentleness, and honey-gathering.

When you order queens from us you get **QUALITY, PURITY, AND HONEY-GATHERERS**. We can fill your orders from our famous Honey-gathering Strain for Queens, Nuclei, and Full Colonies promptly, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. Write for special price on orders of 50 or more. We ask you to give us a trial and let us prove to you that our stock is unexcelled by anything on the market.

Island-bred Italian Queens

	1	6	12
Untested	\$1.50	\$ 7.50	\$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00
Tested Breeding Queens, \$5.00 and \$10.00 each.			

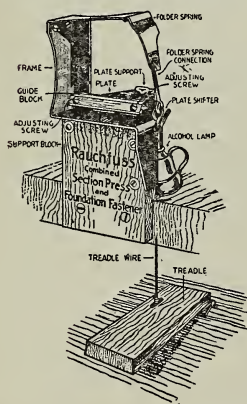
Prices on Nuclei and Full Colonies without Queens

1-frame Nucleus, \$2.00	5-frame Nuclei, \$5.00
2-frame Nuclei, \$3.00	8-frame Colony, \$8.50
3-frame Nuclei, \$4.00	10-frame Colony, \$10.00

Address all Communications to

THE J. E. MARCHANT BEE AND HONEY COMPANY, CANTON, OHIO

Make More Profit by Reducing Cost of Production



Comb-honey producers can put up their sections complete in less than half the time with a **RAUCHFUSS COMBINED SECTION-PRESS AND FOUNDATION-FASTENER**. Now used by hundreds of Western beekeepers who would not think to be without it any more.

IT IS GUARANTEED TO DO MORE AND BETTER WORK THAN ANY OTHER DEVICE ON THE MARKET. Your money back if not entirely satisfactory. Made for $4\frac{1}{4} \times 4\frac{1}{4}$ and also for 4×5 sections.

PRICE \$3.00, COMPLETE WITH LAMP AND TREADLE, DELIVERED POSTPAID ANYWHERE IN THE UNITED STATES. Write for 68-page illustrated catalog of the best Bee-supplies made.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION,
1424 Market Street Denver, Colorado

"Griggs Saves You Freight"

TOLEDO

"Griggs Saves You Freight"

We are always on deck, and with a full line of **ROOT'S FINE GOODS**, and at factory prices. . . No order too small nor too large to receive our prompt attention. . . **PREPAREDNESS** counts in beekeeping; and if you are not prepared you are apt to lose money; so, better be prepared, and send your order now, as goods go same day the order is received.

Beeswax wanted, cash or in trade.

S. J. GRIGGS & CO. . 25 North Erie St. . TOLEDO, OHIO

"Griggs Saves You Freight"

Gleanings in Bee Culture

E. R. ROOT A. I. ROOT H. H. ROOT J. T. CALVERT
 Editor Editor Home Dept. Managing Editor Business Mgr.
 Department Editors:—Dr. C. C. Miller, J. E. Crane, Louis H. Scholl, G. M. Doolittle, Wesley
 Foster, J. L. Byer, P. C. Chadwick, E. G. Baldwin, Grace Allen.
 \$1.00 per year. When paid in advance: 2 years, \$1.50; 3 years, \$2.00; 5 years, \$3.00.

POSTAGE IS PREPAID by the publishers for all subscriptions in the United States, Hawaiian Islands, Philippine Islands, Guam, Porto Rico, Tutuila, Samoa, Shanghai, Canal Zone, Cuba, and Mexico. Canadian postage is 30c per year. For all other countries in the Postal Union add 60c per year postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old must be given. The notice should be sent two weeks before the change is to take effect.

DISCONTINUANCES. Notice is given just before expiration. Subscribers are urged, if unable to make payment at once after expiration, to notify us when they can do so. Any one wishing his subscription *discontinued* should so advise us upon receipt of the expiration notice; otherwise it will be assumed that he wishes GLEANINGS continued and will pay for it soon.

HOW TO REMIT. Remittances should be made by draft on New York, express-order or money-order, payable to the order of The A. I. Root Co., Medina, Ohio. Currency should be sent by registered letter.

AGENTS. Representatives are wanted in every city and town in the country. A liberal commission will be paid to such as engage with us. References required.

FOREIGN SUBSCRIPTION AGENTS.

Foreign subscribers can save time and annoyance by placing their orders for GLEANINGS with any of the following authorized agents at the prices shown:

PARIS, FRANCE.—E. Bondonneau, 154 Avenue Emile Zola.

Per year, postpaid, 8 francs.

GOODNA, QUEENSLAND.—H. L. Jones. Any Australian subscriber can order of Mr. Jones. *Per year, postpaid, 6/7 p.*

DUNEDIN, NEW ZEALAND.—Alliance Box Co., 24 Castle St. *Per year, postpaid, 6/7 p.*

Contents for June 15, 1916

EDITORIAL	465	Holland, Notes from	481
Bees and Cherry Crop	465	Extracting-house on Wheels	482
Bees in Pound Packages	466	Swarming, Prevention of	483
Honey Used by Soldiers	466	Camera, Glimpses of	483
Spread of European Foul Brood	467	Extracted Honey of California	489
Advertising, Fraudulent	467	Swarming in Out-apiaries	490
Granulation of Comb Honey	467, 471	Queens Clipped on Both Sides	491
Education Needed for Foul Brood	468	American Foul Brood	492
STRAY STRAWS	469	Notes from Germany	494
Cappings, to Drain	469	Gravity for Straining Honey	495
Dandelions, Beauty of	469	HEADS OF GRAIN	496
Queens Prefer New Combs	469	Increase by Feeding	496
SIFTINGS	470	Spray on Cover Crops	497
Drouths	470	Swarming with Clipped Queen	497
Sweet Clover and Milk	470	Robbers, Fooling	498
BEEKEEPING IN THE SOUTH	471	Sections, Partly Filled	498
Honey, Cutting Price of	471	Queens, Wingless	499
FLORIDA SUNSHINE	472	Bees and Bullets	500
Palmettos in Florida	472	OUR HOMES	501
Covers, Metal for	472	Kansas, Prohibition in	501
BEEKEEPING IN CALIFORNIA	473	War on Christian Principles	503
Profits in Beekeeping	473	Trouble in Pullman Car	503
CONVERSATIONS WITH DOOLITTLE	474	HIGH-PRESSURE GARDENING	504
Queens, Clipping	474	Farm Periodicals	504
Hives, Painting	475	Farming on Small Areas	504
White Clover	476	Tillage, Proper	504
European Foul Brood	479	Bugs, Squash and Melon	505
Italians Immune to Foul Brood	479	Prickly Pear in Australia	506

QUEENS!

In the Beginning is where Quality starts

Our breeding stocks, our methods of breeding cannot be surpassed anywhere

If you want to know who we are, read "How to Produce Extracted Honey," also "Modern Queen-rearing," both of which we wrote for The A. I. Root Co., while we were their head apiarist some 12 years ago. Untested queens, \$1.00; tested, \$2.00. Other prices on request.

Geo. W. Phillips, Lebanon, Ohio

GOLDEN ITALIAN QUEENS

Bred from a strain of great honey-gatherers; gentle and prolific. Untested, one, 75 cts.; six, \$4.25; 12, \$8.00; 50, \$32.50; 100, \$60.00. All orders promptly filled and safe arrival guaranteed. L. J. Pfeiffer, R. F. D. 15, Los Gatos, California

Deposit your Savings
with
**The SAVINGS
DEPOSIT BANK CO.**

of MEDINA, O.

The Bank that pays 4%

Write for Information

ATSPITZER PRESIDENT E. R. ROOT VICE-PRESIDENT E. B. SPITZER CASHIER

ASSETS OVER ONE MILLION DOLLARS

St. Regis Raspberry

Bears from
June until
November.

Begins bearing same season planted. Colored plate and catalog giving full description sent on application. 1200 acres fruit plants and seeds. W. N. SCARFF, New Carlisle, O.

SPECIAL NOTICE TO OUR CUSTOMERS

As we are going to move August 1, we offer the inclosed list of goods while they last at 10 per cent discount from catalog prices. Order quick, as they will not last long.

11 ARcD 5/10	10 G/8	20 8/8	50 No. 2 Honey-boards	1 No. 115 Honey-tank
10 ARcD 7/10	30 G/10		50 No. 11 honey-boards	5 Hubbard Section-presses
20 AED 5/10	80 H/10	700	T. T. S. P. Frames	1 Dadant Uncapping-can
35 AE 5/8	25 2P/8	800	Danz. Brood-frames	1 Hatch Wax-press
45 AE 5/10	10 2I/8	800	Metal-space Frames	500 Flat Tins 14 to 16 inches long
10 D 5/10	10 2I/10	128	L Fences	200 12-lb. 4x5 Honey-cases in 50's
60 E/8	40 2P/10	100	T Fences	225 12-lb. 4x5 Honey-cases in 25's
70 E/10	10 4P/10	5	Danz. Fdn. Cutting-boxes	212 12 lb. 4x5 Honey-cases in 10's
1 8-fr. Observatory Hive with Super	300	P	Section-holders	200 9 1/4-inch 4R Cases in 50's
1500 A 3/4 x 1 15/16 Sections	12	Swarm	catchers	30 9 1/4-inch 4R Cases in 10's
1000 A 3/4 x 1 1/4 Sections	10	Pepper	box Feeders	60 12-inch Cases 1 1/2 in 10's
1000 A 3/4 x 4 1/4 x 1 1/2 Sections	90	Danz.	Super Followers	100 D Section-cases
1000 B 3/4 x 4 1/4 x 1 1/2 Sections	80	Danz.	Division-boards	40 Chaff Division-boards
5000 Metal Spacers	5	No. 15 B	Cowan Extractors	3 Boxes 8x10 Glass
30 Bingham Smoke Engines	1	No. 17 B	Cowan Extractors	25 Hotbed Sash
50 No. 1 Honey-boards	2	No. 5B	Novice Extractors	1 Alexander Strainer-pail

S. J. GRIGGS & COMPANY . 25 North Erie Street . TOLEDO, OHIO

There is Money in Our 3-banded Italian Bees

20 Years of Select Breeding Gives Us Queens of Highest Quality

Queens for Honey Production - - Queens of Unusual Vitality

Our select colonies used for breeding purposes, larvæ and select drones are those of the highest standard, the choice of over 1000 hustling, honey-producing colonies of pure Italian bees. These select colonies are located at such a distance from all other bees as to assure pure mating, and thus very effective use of our select drones. The larva we use in grafting is as small as can be seen and handled, having just come out of the egg. These are placed in cells which in turn are placed and nourished in strong ten-frame colonies, which, when honey is not coming in sufficiently, are heavily stimulated by feeding. Thus we get cells that produce large, long-lived, and hardy queens, which give workers unexcelled as honey-producers. We use no baby nuclei. All our queens are hatched and reared in strong three and five frame full-depth hives. Thus natural conditions are preserved.

All orders will be filled promptly by return mail or soon. We have no disease of any kind. Satisfaction and safe arrival we guarantee.

Select untested 65 cts. each or \$60.00 per 100 Tested \$1.00 or \$90.00 per 100
Untested 50 cts. each or \$45.00 per 100 Select tested \$1.25 or \$115.00 per 100

All queens are warranted purely mated. Wings clipped free of charge.

Write for descriptive price list.

M. C. Berry & Company . . . Hayneville, Alabama

Gleanings in Bee Culture

DEVOTED TO HONEY, BEES, AND HOME INTERESTS

Established 1873

Issued semi-monthly

ADVERTISING RATES

Twenty-five cents per agate line flat. Fourteen lines to the inch.

SPACE RATES. To be used in one issue: Fourth-page, \$12.50; half-page, \$25.00; page, \$50.00.

Preferred position, inside pages, 30 per cent additional.

Preferred position, inside cover, 50 per cent additional.

Outside cover page, double price.

Reading notices, 50 per cent additional.

Cash-in-advance discount, 5 per cent.

Cash discount if paid in ten days, 2 per cent.

Bills payable monthly.

No medical or objectionable advertising accepted.

Column width, 25 $\frac{1}{8}$ inches.

Column length, 8 inches.

Columns to page, 2 (regular magazine page).

Forms close 10th and 25th of each month.

Address Advertising Department, Gleanings in Bee Culture, Medina, Ohio.

Index to Advertisements

BANKING BY MAIL

Savings Deposit Bank..... 5

BEE SUPPLIES

Blanke Supply Co.....cover
Clemons Co.....12
Colorado H. P. Ass'n..... 3
Dadant & Sons.....10
Dunkel, E. M..... 7
Falconer Mfg. Co..... 1
Griggs, S. J..... 3
Hunt, M. H..... 8
Jepson, H. H..... 7
Lewis, G. B.....10
Nebel, J..... 7
Pouder, W. S..... 8
Peirce, E. W.....21
Root Co., Mechanic Falls... 7
Root Co., San Francisco...20
Root Co., Syracuse..... 9
Stringham, I. J..... 7
Superior Honey Co..... 7
Toepperwein & Mayfield...22
Woodman, A. G..... 7

BEES AND QUEENS

Achord, W. D.....cover
Caraway, B. M.....cover
Leininger, F. S.....12

Forehand, L. L.....12
Forehand, N.....11
Ma chant, J. E..... 3
Miller, J. G.....12
Moore, J. P.....11
Mott, E. E.....12
Quirin, H. G.....11
Robey, L. H.....12
Stover Apiaries.....12
Taylor, J. W.....12
Wardell, F. J.....11

CLASSIFIED ADS.

Bees and Queens.....15
For Sale.....15
Help Wanted.....17
Honey and Wax Wanted...15
Honey and Wax for Sale...15
Patents.....15
Poultry.....17
Patents.....15
Real Estate.....15
Wants and Exchanges.....15

HONEY-DEALERS

Los Angeles Honey Co.... 7
Muth Co., F. W.....cover
Weber, C. H. W. & Co.... 9

LAMPS

Best Light Co..... 13

MACHINERY

Barnes, W. F. & J.....
Myers, F. E.....cover

MISCELLANEOUS

American Can Co.....cover
Somers, Harold13

NAVIGATION

D. & C. Navigation Co....13

PATENTS

Williamson, C. J. 7

POULTRY

Plymouth Rock Squab Co...13

PUBLICATIONS

Guide to Nature.....21

TYPEWRITERS

Olivercover



NEW BINGHAM
BEE SMOKER
Patented

Nearly forty years on the market and the standard in this and many foreign countries. It is the all-important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in Beekeepers' Supplies.

Smoke Engine, 4-inch stove	28 oz.	\$1.25
Doctor, 3 1/2-inch stove	26 oz.	.85
Two larger sizes in copper extra50
Conqueror, 3-inch stove	23 oz.	.75
Little Wonder, 2 1/2-inch stove	16 oz.	.50

Hinged cover on the two larger sizes. Postage extra.

Tin Honey-cans---Low Prices

Our three-year contract is protecting us from high prices until July 1. We will give the beekeepers the benefit of our low prices, so be sure you secure your supply before that date. Sixty-pound cans shipped from Ohio factory or Chicago—friction-top from Chicago. Give us the quantity wanted and let us figure with you. Friction-top cans and pails—5-lb. size, per 50, \$2.50; 100, \$4.50; 203, \$8.50; 1015, \$40; 10-lb. size per 50, \$3.50; 100, \$6.25; 113, \$6.75; 565, \$33.75.

A. G. WOODMAN COMPANY
Grand Rapids, Michigan

For New England

Beekeepers, we have everything you need in the way of supplies. Remember we are in the shipping center of New England. Let me send you a new catalog.

H. H. Jepson, 182 Friend St., Boston, Mass.

PENNSYLVANIA BEEKEEPERS

Our 1916 catalogs now out. Postal will bring you one. Root's goods at Root's prices. Prompt shipment.

E. M. Dunkel, Osceola Mills, Pa.

If you need supplies or bees shipped promptly write us. Our stock is complete, no delays. Chaff and single-walled hives. Bees by the pound, nucleus, or full colonies. Untested queens, \$1.00; tested, \$1.25. Catalog free.

I. J. STRINGHAM, 105 PARK PLACE, N. Y.
Apiaries, Glen Cove, L. I.

When Ordering Supplies

remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Maine
J. E. MASON, Manager

LOS ANGELES HONEY CO.
633 Central Bldg. . . . Los Angeles, Cal.

**Buyers and Sellers
of Honey and Wax**

Write Us for Prices when in the Market



Established 1885

A great honey crop is in sight for 1916. If you are needing hives, sections, foundation, and other bee supplies, send at once for our large catalog, full of information. We carry a good assortment of supplies for prompt shipment. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co., High Hill, Mo.
Montgomery County

For Quick Shipments
Write or Telegraph
Superior Honey Co.
Ogden, Utah

Branch at Idaho Falls, Idaho

Beehives, honey cans, and "everything in bee supplies." Manufacturers of "Superior" foundation (Weed process).

PATENTS

Practice in Patent Office and Courts
Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building
WASHINGTON, D. C.

Your Honey Crop

Depends on Your Interest in Bees

The greater the interest, the greater the crop. Increase your interest by studying what happens in the egg. Here the individual bee begins life.

The Embryology of the Honey Bee

By Dr. Jas. A. Nelson

Price \$2.00 prepaid
Clubbed with "Gleanings" one year, \$2.75

THE A. I. ROOT COMPANY
Address the Medina Office

Preparedness!

Your success this season, Mr. Beekeeper, depends on being ready. You need to buy your supplies now.

Root's Goods mean Real Preparedness.

We sell them in Michigan. Send for catalog. Beeswax wanted----

M. H. Hunt & Son, 510 Cedar St. N., Lansing, Mich.

"If Goods are Wanted Quick Send to Indianapolis"

Indications just now are very favorable for a good season; but we are, of course, at the mercy of the weather conditions. A good season means an excessive demand for the line which we handle, and we mention this, urging our friends to place their orders before the goods are really needed, that none may be disappointed.

We carry Root's goods and sell at their prices; and considering this as a shipping-point, we can save you time and freight by having your orders come to this house.

If you are new to the business we should like to explain that Root's goods are the very best that can be produced. If you have been using THE ROOT LINE you will recognize the truthfulness of the above and will want more of the same goods.

Promptness in filling orders is the motto here. We also give small orders the same careful attention that are given to large orders.

Let us have the pleasure of mailing you our free catalog.

Walter S. Pouder, Indianapolis, Ind.

873 Massachusetts Avenue

NOW IS THE TIME

To order your supplies, and thus have every thing in readiness for the spring.

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen and drone traps, swarm-catchers, feeders, honey and wax extractors, capping-melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

C. H. W. Weber & Company, Cincinnati, O.

2146 Central Avenue

What do you know about that

We are getting an almost innumerable number of orders to go by parcel post --- a great thing for beekeepers on rural delivery. BUT REMEMBER to always include enough in the amount sent to cover the postage required. . . .

For instance, if you are within 150 miles of Syracuse, and need 500 sections, we can mail them for 41c; 250 sections for 21c, and 100 sections for 11c. Foundation in 5-lb. lots, can be mailed for 11c; 2 lbs. for 7c; 1 lb. for 6c. Always figure postage more than foundation weighs. Rates inside of 150 miles once the total weight plus 4.

F. A. SALISBURY, Syracuse, New York
1631 West Genesee St.

Make This a Lewis Year

While you are starting the year's work—getting your bees ready for business—taking stock of supplies on hand and speculating as to what the season's outcome will be

Make This Resolution

That you will use LEWIS BEEWARE this year—because it means success insurance to you—because it means beehives and parts made of the best material by skillful workmen—because it means goods accurately and systematically packed—because it means sections made of bright lumber, highly polished, accurately dovetailed, and scientifically grooved.

Lewis Hives are Built Like Furniture

Lewis Sections are the Kind that do not Break in Folding

You will find LEWIS BEEWARE almost at your own door—thirty distributing houses in the United States and foreign countries. If you have not one of our catalogs send for copy at once.

G. B. Lewis Company, Watertown, Wis., U.S.A.

Exclusive Manufacturers Lewis Beeware

DO YOU WANT Your Bee Supplies Shipped Promptly?

We carry from four to six carloads of the finest BEEWARE on hand at all times, and can fill your orders without delay. . . . BEE-HIVES, SECTIONS, Shipping-cases, Tin Cans, and all other Bee Supplies; also

Dadant's Foundation

by return freight, mail, or express

DADANT & SONS, Hamilton, Ill. Dear Sirs:—The box of foundation arrived a few days ago in fine condition. I have kept bees for over thirty years, and have purchased foundation from many firms, and must say that your foundation is the nicest that I have ever used, and I wish to thank you for the prompt shipment and large amount of wax you secured for me.

A. W. DARBY, Alburg, Vt., May 3, 1916.

We have forty years' experience and thousands of satisfied customers. Are you one of them?

Dadant & Sons, Hamilton, Illinois

GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio.

E. R. ROOT, Editor
A. I. ROOT, Editor Home Department

H. H. ROOT, Managing Editor
J. T. CALVERT, Business Manager

Entered at the Postoffice, Medina, Ohio, as second-class matter.

VOL. XLIV.

JUNE 15, 1916

NO. 12

EDITORIAL

Mr. M. W. HARVEY, in this issue, gives some good orthodox advice on the control of swarms at outyards—see page 490.

Our Cover Picture

THAT the straw skep is not a relic of the past in every country is shown by the picture reproduced on the cover, sent by Hans Matthes. Mr. Hamelberg, in his article, page 481, explains why the straw hive is still used so extensively in Holland.

Honey as a Food

THE honey salesman should not fail to read very carefully the article by J. H. Heberle in this issue. The German chemists have proven that honey is more easily assimilated by persons of weak digestion than is ordinary cane sugar; and they explain why this is so.

A Long-time Subscriber

ONE of our subscribers, Mr. J. B. Ratcliffe, Amboy, Minn., sent in his check to cover five years renewal for GLEANINGS, *making thirty-eight years of continuous subscription.* We wonder how many others there are who have been with us this length of time.

Drifting

MR. R. F. HOLTERMANN, page 491, has not had the same experience, apparently, with his bees drifting in his big quadruple winter cases that we have had. He suggests that if we have the entrances arranged so they will face all points of the compass there will be no drifting. That is exactly what we did have, yet we had a great deal of drifting. Time and again, colonies that were very strong would become very weak, or one that was very weak became very strong.

We were well pleased with the big winter cases except in this one particular.

Honey Butterscotch

HERE is a recipe for some good old-fashioned butterscotch. You can't get enough of it, and it won't hurt you for it's nearly all honey.

Boil two cups of honey until it hardens when a little is dropped into some water. Stir the latter part of the time, taking care not to let it burn. Stir in half a cup of melted butter, add $\frac{3}{4}$ teaspoonful of salt, and flavor with vanilla. Pour on to a cold greased platter, and, when cool, cut into squares and wrap in oiled paper. Wrapping is quite important, as, unless the candy is kept away from the air, it will gather moisture and become sticky.

How Bees Made a Cherry Crop Possible

MR. E. WHITCOMB, a former president of the National Beekeepers' Association, and one of the prominent beekeepers of Nebraska, reports in the *Independent Farmer* of May 25 how his bees made it possible for him to secure a big crop of cherries when other cherry-growers, without bees, secured none. He says:

We had 300 bearing cherry-trees close to our apiary. During the blooming season there were two days during which our bees worked on these cherry-blossoms profusely. As a result we harvested 300 bushels of cherries when our neighbors two or three miles away, who had no bees, and whose trees bloomed as profusely as did ours, were compelled to come to our orchard for cherries.

PROF. M. B. WAITE, of the United States Department of Agriculture, among other things he has given to the public on the subject of the relation of bees to horticulture, says:

"Out of 2586 blossoms covered with gauze netting, only three apples set fruit. Of these the Baldwin, Spitzenburg, and Fameuse set some fruit. The Baldwin, which is often self-fertilized, gave four times better results when cross-pollinated. Cross-pollinated apples were larger, more highly colored, and better supplied with seed."

A Remarkable Clover-honey Year in Prospect

NOT in years have the prospects for clover honey over the country generally been so favorable as this year. The U. S. weather maps show that there have been copious rains thruout most of the clover districts. The rains of this season have pushed them forward still more. Unless cold and rainy weather continues thruout the blooming period there will be clover honey this year galore unless—well, wait.

Honey has been yielding well from a good many sources in the southern states. Altho the season was partly a failure in Florida it has been good in Texas. Conditions have been favorable for alfalfa in most of the western districts. The season will not be a failure in California.

Successful Shipments of Pound Packages of Bees from the South

THE Penn Co., of Penn, Miss., report that they have shipped 1000 different packages of bees without combs, and the loss has been insignificant. W. D. Achord, of Fitzpatrick, Ala., apparently has not had as good results, for he says he has put in claims of over \$500 against the express companies for delays in shipment.

We have been shipping bees from our southern apiary in combless packages to our Medina yard. When the weather is not too hot they arrive in fine condition. But it is evident that the express companies must learn the importance of keeping bees out of the sun, and putting them thru as speedily as possible.

There are Dollars in it; a Kink in Feeding

THOSE who are making increase will doubtless be interested in the reply to Dr. C. E. Blanchard, in the Heads of Grain department, page 496. In raising queen-bees, at least, we have proven one thing to our satisfaction—that the food supply for a cell-building colony must be continuous and very slow. Any feeder that gives to the bees a large amount of food all at one time, or even a few ounces in a few hours, is not suitable for stimulating. The Boardman one-hole feeder, or any feeder where the supply can be regulated down to a minimum, will produce more bees and more cells and more queens than any other feeder. With it a quart of feed can be made to last for two or three days, depending on the size of the colony. At the present price of

sugar climbing up to 10 cents it pays to have an economical feeder. A feeder like the Alexander, for example, where the bees can empty it in a couple of hours, starts the bees to rushing out of the hives in an uproar, and is quite liable to start robbing. With the Boardman stopped down to one hole there is no excitement, no rushing from the hive, but a continuous supply of food for cell-building, and brood-rearing goes on without a let-up.

Time and time again we have had fine batches of cells destroyed because there would be a few hours when there would not be a continuous supply of feed.

While this is something of a repetition of what we have stated already elsewhere, it is something that will bear repetition until beekeepers grasp the principle, *for there are dollars in it.*

The Ford Automobile for Out-apiary Work

FOR the first time in our experience we are using the Ford in place of our heavier machine at higher prices. We find the expense of operation about one-third that of the heavier machine. These little Fords of three-fourths ton weight will go where the ton and 1½-ton machines cannot. With their narrow tires they will run in ordinary wagon or buggy ruts, where the tires of the larger machines can scarcely travel. Just recently we put on the rear of our little Ford a light truck body; and we find that, while the little light outfit will not carry as heavy a load as the larger machine, yet it goes so much quicker and at so much less expense that we are using the Ford in place of the heavy truck about nine to one.

Are the Allies Using Honey in Place of Sugar for their Armies?

A YEAR ago cheap honey from the South was begging a customer; but now the condition is changed. Large amounts of honey are being exported, presumably for the armies of the Allies. The soldier is supposed to have a balanced ration, and sugar is important as one of the foods. When sugar is expensive, why not substitute honey? Sugar has gone up to such a high price that honey is actually cheaper, and is, of course, a better food.

The great nations of the world that are compelled to economize doubtless see this, and the result is that extracted honey will probably be firm during the coming season, even in spite of the prospect of a big crop.

While the great armies of the world are

possibly using honey, the extensive advertising of the A. I. Root Company in placing honey in families where it has never been before is doing its part. Many, some of whom are competitors, are hoping that the Root Company will continue its campaign of advertising honey.

How European Foul Brood Spreads; a Plausible Explanation

IN this issue, page 479, Mr. Allen Latham, an unusually close and careful observer, has an article that is worth a careful reading—not only on the part of one who has European foul brood but the one who *may* get it, and the latter class is by no means small. His theory, that the spread of the disease may come thru an infected water supply from the fecal discharges of nurse bees from diseased hives, may have something in it. It is very clear that European foul brood does not spread in quite the same way that American does. If Mr. Latham's theory can be proven to be correct, it will help us materially in combating the disease.

That the disease can be held in control, or cured by the introduction of a mild acid in the food supply, does not seem quite so plausible in view of the fact that liberal feeding without medication or a good honey-flow will nearly always check European foul brood, and sometimes cure it. However, the plan is worth trying. Possibly the bacteriologist under Dr. Phillips could determine whether a mild acid is destructive to the *Bacillus pluton* that is the cause of European foul brood.

Exaggeration in Advertising; a U. S. Supreme Court Decision

EVERY now and then an advertiser, while giving value received, in order to get business will make extravagant claims. Not long ago an advertiser in our columns made claims concerning his queens that we regarded as extravagant and impossible, and we wrote him, requesting that he remove the objectionable feature; but he demurred. We insisted, and he finally complied. We were uncertain at the time whether we had the legal right to withdraw the objectionable sentence; but we came to the conclusion that we would stand damages if necessary.

We now learn that the Supreme Court of the United States has handed down a decision to the effect that an advertiser is guilty of fraud if by exaggerated advertising he secures business, even tho he gives value received. For example, a real-estate agent

may make certain plausible but impossible claims concerning the productiveness of lands he advertises. He makes sales, and the properties are worth the price paid for them. But according to the Supreme Court it is a fraud if that advertiser makes exaggerated claims that are not true, and a fraud order may be issued against him, shutting him out from the mails even tho the price charged is fair.

The Rural New-Yorker, in commenting on this decision, says, "It certainly squares with common honesty and decency in business transactions. Too many otherwise perfectly honorable concerns consider they are licensed to make all sorts of unwarrantable claims in their advertising so long as they are giving fair value for the money they received. We are glad to see the Supreme Court put the stamp of dishonesty on unwarranted advertising claims."

We hereby give notice to our advertisers that we shall exercise our discretion in removing objectionable statements — statements which, in our judgment, are calculated to catch customers, even tho those customers receive full value for their money.

Granulation of Comb Honey; the Results of an Experiment Covering Three Months

WE believe it is a generally recognized fact that honey, either comb or extracted, if subjected to *variable* temperature will granulate more readily than the same honey kept at a constant temperature, either high or low. It has also been proven beyond question that a cold atmosphere is much more conducive for making honey go into a solid state than a warm one.

To demonstrate the first proposition, we made up a case containing a few sections from the West, a few from the middle West, and a few from the East, of clover honey. The lot was put indoors and outdoors every day beginning Feb. 1 until last week. Results: One of the samples granulated solid; the other two remained entirely free from granulation. Contrary to expectations, the two last named did not granulate in spite of the extremes of temperature during the February, March, and April weather almost down to zero at times, and up to 80 or 90 at night. This puzzled us not a little until we remembered that those three lots of honey had been kept prior to that time and continuously at a temperature of 90 F., since the first of November. That high temperature, without any variation, had put the honey in a state where any subsequent

treatment would not be likely to make it granulate. While one of the samples did turn to a solid condition, the other honey remained as liquid as when produced, and was in a fine condition.

This brings out one point that is worth considering. A long-continued temperature of 95 or 96, or even 100, for two or three months, may insure some grades of comb honey against granulation even when subsequent conditions are favorable.

It is a well-known fact that, when *extracted honey* is heated to 130 F., and kept hot for two or three days, it will remain liquid much longer than the same honey if heated to 160, and kept hot for only about an hour. By prolonging the period of a lower warm temperature, almost the same results are secured for comb honey apparently. The lower the temperature down to, say, 70 F., the longer it must be kept at that point to insure against granulation.

Taking these facts into consideration, the comb-honey buyer will seek to keep his honey in a warm or even hot room up to about 100 degrees, and hold it there to prevent early granulation the following summer or fall.

The Next Edition of the A B C and X Y Z of Bee Culture and the Frenchman who Thought all the World could Parlez-vous

WHEN a certain Frenchman left his native country he supposed that all the rest of the world could *parlez-vous* simply because he could. When the authors of the original A B C book put out the first editions of it they assumed that certain fundamentals in beekeeping were understood by every one; and the result was in some cases they shot a little over the heads of many of their readers; or, as the inimitable Hasty once said, they got the hay so high in the rack that some of the sheep could not reach it.

The new edition takes up the minutest details so that the beginner cannot fail to have a general groundwork of the business before he goes into the general art. For example, no previous edition has had a general article on "brood," altho many of the articles had something to say about it in a general way and considerable about foul brood. The new edition, now on the press, has a chapter on the subject, attempting to define what normal brood is in its different stages; how worker and drone brood may be distinguished, and how the cappings of either can be distinguished from the cap-

pings of comb honey. Of course, the veriest tyro in the business ought to know the difference between capped comb honey and capped brood, and, like the Frenchman, we thought everybody did. But if one has never seen either, how is he to know? The pictorial representation with the legend beneath, taken from our next edition, attempts to make this plain. See page 488, this issue.

Education and Diplomacy versus the Strong Arm of the Law in Handling Foul Brood

ONE of our Ohio foul-brood inspectors, A. C. Ames, was in to see us the other day. In speaking of the foul-brood situation he remarked, "I have come to the conclusion that we need in Ohio and everywhere else a campaign of education. Foul brood is scattered all over the state. Many beekeepers are careless and indifferent, and so, of course, they eliminate themselves in time, but they leave behind them sources of infection. There are beekeepers of another class who are inclined to defy authority if the strong arm of the law is brought to bear to compel them to clean up. In that case they may or may not make trouble by scattering the disease out of pure revenge." He mentioned one case where one of the best beekeepers in the state is located. This beekeeper keeps his yard free from disease. Not far from one of his yards is a man who harbors disease, and apparently always will have it unless the state compels him to clean up. Said Mr. Beekeeper, "Oh! let him alone. I can keep disease out of my yards as it is; but I couldn't if he deliberately tried to put it there." If the inspector brings the law to bear, the other fellow will naturally infer that his neighbor "squealed" on him.

"One who has foul brood and who would resent compulsion has a powerful weapon," said Mr. Ames, "and diplomacy is far more potent with such fellows than the strong arm of the law, and a good deal safer for beekeepers in the immediate vicinity."

Incidentally Mr. Ames is one who believes we are going at the foul-brood situation in the country wrong end to. He holds that every state should have a campaign of education. This can be done by sending out extension workers who will instruct good beekeepers how to prevent and control disease, as the other fellows will eliminate themselves in the near future. The Ohio chief inspector, Mr. Shaw, hopes in time to get this kind of extension work started. If he does he will have the gratitude of the beekeepers of the state. Speed the day!

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



J. L. BYER, you are quite right, p. 430, in saying that "dysentery (?) " (isn't diarrhea the better word?) can be caused "without any cold weather, and by so short a confinement as five or six days."

I've known bees to spot their surroundings in summer, with no confinement whatever, apparently because badly scared. [The word "diarrhea" is more accurate than "dysentery;" but the latter term is a little smoother, and has become so engrafted into our literature that it seems impossible to make the change.—Ed.]

"FIRST covering the entrance with netting so that the bees would not fly out, the hive was placed in the house cellar," p. 398. Some beginner may understand that to mean that it is all right to have bees fastened in hives in cellar, which would be a mistake. Of course the netting was removed after the bees quieted down.

MRS. ALLEN, p. 428, either you have made a new observation or you haven't observed closely enough. It's the first mention I've seen of bees handling eggs with their antennæ instead of their jaws. [Evidently Mrs. Allen meant "mandibles" instead of "antennæ;" because, so far as we know, the latter are never used for any sort of work in the hive.—Ed.]

If you have only a small amount of cappings, and want to drain all the honey out of them, here's a kink worth knowing. After letting them drain perhaps a day, put the cappings down cellar to finish draining, and the honey will become thin, and drain to the last drop. You can feed it to the bees, or use it for vinegar. An easier way is to let the bees clean the cappings. Put them in a shallow box, put something under one side of the box so as to make it slanting, and as often as the bees dig the cappings level turn the box around.

A. I. ROOT, in speaking a word in appreciation of the dandelion, p. 463, you might add a word as to the beauty of the flower. One who can look closely at it without admiring it is lacking in appreciation of the beautiful; and a bank thickly studded with the bright blooms is a thing to delight the eye. [A lot of good people in Medina think we scattered dandelion seed; in fact, practically every beekeeper, because his bees pollinate the dandelion blossoms so that all the seeds mature, is accused of the same thing, whether he lives in Medina or else-

where. It is these very people who see anything but beauty in something that requires constant warfare to keep it off a lawn.—Ed.]

R. F. HOLTERMANN, you say, p. 405, that "Colonies have been found with the swarming impulse week after week, altho I continue to break down the cells." That sounds as if you could prevent swarming by continuously killing cells. With me that's the unusual thing. Either the colony gives up starting cells after about the second round, or else it swarms without waiting for cells to be sealed. If I persist in killing, a persistent colony will swarm with an egg in a cell. You say, "If I could have foreseen this I would have shaken . . . as we all know such a colony will not gather the usual amount of surplus honey." By "such a colony" I suppose you mean one kept from swarming by continuously killing cells. Of course such a colony will not equal one that never thinks at all about swarming, but I don't notice such a great letting-up in colonies where cells are killed. At any rate, if I could keep a colony from actually swarming by continuously killing cells, I'd never think of shaking, for I believe shaking would interfere with the crop more than the sulking of swarmy bees, if they can be kept from going on to actual swarming.

"QUEENS dearly love to lay eggs in new comb," p. 437. My observation has shown that bees decidedly prefer old black combs for either eggs or honey; yet several times I've seen the statement that they preferred new comb, so that it is possible that, under some conditions, they do. Who can tell us what the conditions are? I can think of one; and that is, when drone comb is greatly desired and new drone comb is built. In that case I've known eggs to be laid in new comb a long way from the brood-nest. [We have noticed that queens seem to have a liking for new comb, particularly that built from foundation. It is not the newness of the comb or wax, but, rather, the physical condition—the convenience of the shallow cells. We have very often seen a queen take up with a partly drawn comb from foundation, and supposed that the reason for this was one of pure convenience, both for laying the egg and for determining whether the cell is eggless or broodless; for the queen in this neck of the woods always makes an inspection of the cell before she lays the egg. She will turn around unerringly and deposit the egg in the cell inspected.—Ed.]

J. E. Crane

SIFTINGS

Middlebury, Vt.



I have just opened several hives that had European foul brood last year, and were treated by making queenless for a time. Some were given a young queen at the proper time. The brood in all looks healthy and free from disease.

That item in editorial, page 302, April 15, containing the experience of E. D. Townsend in advertising, viz., that the advertising that brought best results was in women's journals of national circulation, is well worth remembering.

I notice that O. L. Woodward reports on page 359, May 1, that European foul brood spread to those colonies immediately adjoining the one first discovered. It looks more and more as tho it spread from nursing bees entering the wrong hive.

"Florida Sunshine!" Hurrah! A new department in GLEANINGS! This will be particularly enjoyable in that portion of the year when we have little sunshine in our northern skies. I spent nearly two days in Mr. Baldwin's charming home among the pines three years ago, and I believe no better man could be found for this department in all Florida than he.

A little cloth-covered book of 64 pages has come to my table entitled "The Value of Sweet Clover." It is, I believe, the best-arranged treatise I have seen on this subject. It is by J. F. Sinn, of the Berry Seed Co., Clarinda, Iowa. The price, however, \$1.00, seems quite too high when you can get a well-illustrated bulletin containing even more matter by sending our cents to the International Harvester Co., Chicago.

That little poem by Mrs. Allen, page 330, is well worth reading—not once nor twice, but many times, until we can catch its meaning in something of its fullness. The subject is one of the smallest objects in which we are interested, and yet we cannot comprehend the mysteries and wonders it holds in its tiny shell. And then to think that there are a thousand things all about us just as wonderful. Surely wealth is not altogether in gold and silver, or notes and bonds, or other material things.

On page 167, Feb. 15, H. L. Case, F. Greiner, and W. F. Marks recommend past-

ing a label on each comb of honey, stating that "this section of honey (14 oz.) equals in food value 24 oz. of beefsteak, 30 oz. of codfish, 20 eggs, 11.2 oz. cream cheese, 2 quarts of milk," the whole costing \$1.52. Now I have had a very high opinion of the food value of honey; but this beats me. Would it not be better to say, "This section (14 oz.) of honey equals in food value any one of the following"—24 oz. of beefsteak, etc.? or put it as it is in the *American Bee Journal*, "14 oz. of beefsteak or 30 oz. of codfish," etc.

Our friend Doolittle discusses drouths, page 144, Feb. 15, in an interesting manner, but does not tell us how they can be prevented. Like the poor, they are likely always to be with us. One hundred years ago this very year there was an unusual drouth in this section, with unusual cold, so it is handed down as the cold dry summer of 1816. A good crop of winter wheat matured that kept the people from starvation, and so it has been ever since—seasons of drouth and seasons of unusual moisture. In 1860 we had little rain in this locality until late in July, and stock had to be reduced to one-fourth the usual amount to winter. Almost every colony of bees died, and yet seed time and harvest have not failed, and we seem to get along fairly well.

I see two editorials in GLEANINGS for May 1, along the line of sweet clover. With the eye of faith the editor sees our country "from the Atlantic to the Pacific, and from the Great Lakes to the Gulf," as a land flowing with milk and honey. He says that badly cured sweet clover fed to cows causes them to give more milk than other hay. The increase in the flow of milk from cows fed on this once despised weed has been noted in these parts, and it is a most important fact. As the country grows older and our cities larger, the demand for milk increases by leaps and bounds. Already the city of New York sends a daily train as far as northern New York, and on down thru Vermont, 350 miles, and loads up with milk packed in ice for the population of the city. Large quantities of milk or cream are used for ice-cream—a modern demand. Large amounts of cream are separated and sent to the cities daily, in addition to the milk. It looks now as tho the value of sweet clover would come quite as much from its ability to increase the flow of milk as the flow of honey.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas



While Dr. Miller and others had a time deciding whether queens at a certain stage of their lives "quahked" or "piped," *weunses* have produced a crop of over 35,000 pounds of bulk comb honey. A difference in locality.

Rain, rain, rain, during the last several weeks, and pretty general over the greatest part of the southwest, except in the lower Rio Grande Valley. Altho preceded by a long drouthy period there has already been obtained thruout the mesquite sections a good crop of early spring honey from this source. Prospects for our usual honey crop are excellent too.

While the beekeepers of the North were determining whether their bees would come out of winter quarters successfully, beekeepers of the great Southwest were busy—head over heels—making a honey crop from the mesquite. This began to bloom in March, a month earlier than usual, and yielded an excellent crop of very fine white honey—another matter of locality.

It is interesting to note the great popularity of the automobile in beekeeping now. The change has come only during the last few years, altho a few beekeepers used them before. We could not get along without one. Our only regret is that we did not procure one several years ago, as we know now, from careful estimation, that we might be several thousand dollars better off if we had.

Rabbit-spacing of frames as used by the late L. Stachelhausen is still kept up by his widow, Mrs. Stachelhausen, and her son-in-law, Ed. Dietz, who together continue the bee business formerly established by our old veteran "Father of Southern Beekeeping." Folded tin rabbets, notched to hold each plain all-weld shallow frame, are preferred by them to the self-spacing-frame feature. They operate more than 600 colonies.

By our smoke method, and shaking out the few remaining bees as the supers are jerked off and the hives loaded immediately, it is possible to take off *more than a thousand pounds of honey in half an hour*. The writer holds an actual record of 1140 pounds of honey removed in exactly 28 minutes, a young lawyer friend, then a beekeeper, keeping the time.

"All work and no play makes Jack a dull boy" is an old saying with much truth in it. This applies to beekeepers too, and other folk. It is gratifying to note the change in GLEANINGS, that of devoting more space to the poetical and the comical side of beekeeping instead of giving only the good solid matter. Mrs. Allen and J. H. Donahey are both aiding in this direction by the contributions along their respective tendencies. This "kind of stuff" may not appeal to everybody, but some of us like a change from the ordinary once in a while.

There has already been trouble in the Texas honey market this early in the year. Certain parties who felt they were not getting their share of the honey trade, consequently cut prices below the market figures. This was followed by others; and, as a result, market prices dropped one cent a pound all around. Such has also an ill effect in that the buyers have become reluctant about handling the product on account of the instability of prices, and so the beekeepers suffer. Shall we ever be able to get together, and, thru organized efforts, save our industry from these ruinous proceedings?

PREVENTING GRANULATION OF HONEY.

If every beekeeper would heat the extracted honey to a temperature of about 150 F. before sending it to market, there would be less complaint from dissatisfied customers, and a better sale of honey. Our experience has taught us to pack not a single package of honey, extracted or bulk comb, without first heating the liquid honey that goes into the finished package. While this does not insure against granulation again later, the heating does delay this long enough so that the honey may be sold and used before it might granulate again. This enables us to sell more honey instead of finding stocks of granulated honey on hand that cannot be readily sold off on account of the objection found to it on the part of the customers. There are a few consumers who actually prefer honey in the granulated form; but the great majority believe all honey in this state to be old honey, and not fit to use. Much of the most beautiful white honey this spring has caused trouble of this kind because it showed a great tendency to granulate within a few days after it was extracted. Heating all that we shipped out has prevented us any trouble of this kind, however.

E. G. Baldwin

FLORIDA SUNSHINE

Deland, Fla.



At present writing, May 7, the saw palmetto (called also scrub palmetto (*Sabal megacarpa*) is just coming into bloom, and yielding a pound per hive a day in the neighborhood of Eau Gallie East Coast, about fifty miles below here.

It will be in full bloom here by the first or second week in June. Weather has been very dry, but that is no criterion of the yield. The year when the bloom looked the poorest, the yield was the best ever known. From six to eight pounds daily per hive has been reported from this source, and eight or nine is not unknown. This palmetto grows all over the "flatwoods" (the low pine-lands that overflow more or less during the rainy season), also along all water-courses, and on the edges of all heavy hammocks. The latter places are best, for there the bush grows to the height of eight feet or more, and yields best. The stunted sort in the flatwoods does not yield so well. Too much rain during bloom produces a mildew; too great drouth or dryness in the air, too much heat, produces a parched bloom that withers soon. Both conditions are detrimental to nectar secretion. When all conditions are right, however, it yields profusely, and is the finest of table honey. Some think it the very best in the state. It is lemon yellow, thick heavy body, and aromatic both in taste and smell, wonderfully appetizing and delicious. Having had two poor years in succession from this source, it looks as if we might get a yield this year, or, as the vernacular has it, "We belong to have a good bloom."

"Even an error may give text for a sermon." I confess, when I read "Don't we have good-looking covers?" (Mrs. Allen, page 182) I was ready to shout, "Yes, if they are metal covers;" but further perusal of that department contribution showed me that our poetess was thinking of one kind of covers and I of another. But, all the same, I must give that sermon, even tho a mistake led up to it.

Florida, above all other states, needs metal-roofed covers. For sixteen years I have tried all the kinds of covers ever tried by any mortal man. I have used wooden covers, put together with kerfs, with grooves and tongues, painted joints, etc. I have used tarred-paper covers and roofing-paper covers. I have never yet found a brand that would not leak sometimes, and many of them all the time, some very badly. A bad case of mildew, warping, and decay is the result to the cover that leaks, and

mayhap worse to the colony. As a roof is the most important part of the house, so it is of the hive. If that is poor, the whole is a failure, no matter how good in itself the rest may be. Here the summers are in the rainy season. We may have bright hot sunshine for half a day, and downpouring rains the rest, then steaming heat again. You can imagine how an ordinary roof suffers—even a roof that would pass as a pretty good cover in the North.

I find galvanized iron better than tin. If you paint the former, all the better; if you do not get around to it in time, it suffers little, if any, for a good while—no rust, no warping, no leaks, and last, but not least, no blowing off. I used to be annoyed in outyards, or at the home yard, when absent, by the covers going rolling across the yard in some of our summer high winds. Now, with the metal-roofed telescoping covers all is solid, secure, and dry as a powder-horn. I can leave a yard for months, and know that all is absolutely as dry and secure as the heart of the pyramids! "I care not what others may say; but as for me, give me" metal covers or give me none! While I know some advocate, even here, a cheaper cover, sooner or later they will regret it. I nail the metal part down over the telescoping side and ends with one-inch clout nails that clinch easily. I have devised a way of placing the cover over the projecting edge of the sliding leaf in my saw-table, and clinching the nails on the iron table. It takes but a few moments to go over a hive thus. The nails are driven at an angle, so as to enter the sides and ends, not into the board top merely, under the metal, thus welding the whole into almost one piece that can be thrown and banged around endlessly with no danger whatever of breakage. And then, too, these covers can be piled up so neatly, take little room, can be used for piling hives on, act as a seat in the yard, stand firm when so piled, do not rock and slip around as sloping covers do. They are exact and symmetrical, and practical in every way. It seems to me for our climate especially, they are the "last word" in hive-covers. I would strongly advise all who are beginning with bees here, or who may not be entirely satisfied with the sort of covers they are now using, to give these metal-roofed covers a trial, convinced as I am that they will thence use no others. They cost a bit more, but are well worth it. To come back to the starting-point, you can still exclaim, "Don't we have good-looking hive-covers?" for none give a neater look to a yard than these same metal telescoping covers.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



Thirty years ago today (May 22, 1916) I hived my first swarm of bees and may be said to have entered the bee business on that day, for I have owned bees ever since. One of the reflections that came to my mind in a most forceful manner was this: "What should be our attitude toward the beginner?" As a matter of justice and fairness toward the amateur there are many things we might say to him that would tend toward discouragement on entering the bee business as an occupation. From my own experience and observation I am ready to give some frank words to the amateur. I do not believe there was ever a more verdant youth than I at the beginning of my beekeeping experience—that is, so far as any knowledge of the bee was concerned. I had sufficient enthusiasm to keep pace with any condition which might arise; but the necessary knowledge was lacking. If, instead of my uncle having given me a lot of second-hand hives, with a little encouragement, he had advised me to get rid of those bees as quickly as possible, and avoid the fever for all time, I should have been financially better off at the end of the first eighteen years. It is not my wish to say that I could not have made a success of the bee business in those years had I had experience. I did not know how, and my time was too much occupied with fruit and potato growing to give the bees the required care. Then, too, I was trying to raise comb honey every year, regardless of the season, with the result that my loss in sections was very heavy, and my output of nice comb honey very small.

Those conditions prevailed until my bees were becoming less and less in numbers, the other farmwork having divided my time in such a manner that the bees were the last to receive attention. It was a dead loss to me, and I thought many times I would give the bees up entirely. But that old feeling of love of nature would assert itself, and I could not resist the fascination of the bees. Now, here is one of the points I wish to make clear. The amateur with the love of nature in his heart, and the bee a part of this devotion to nature, will succeed when the amateur who goes into the business simply as a business asset will fail. It takes a lot of courage to face a series of poor years (and consequently small crops), and the fellow who enjoys the business will hold on when the one who looks only for money will quit.

As a matter of fact I am thoroly of the

opinion that at least 90 per cent of all those who have entered the bee business more or less extensively have failed, and the greater per cent of those remaining have made little more than the amount actually invested. The fact that I with many others had failed in my early efforts to make a financial success of the business does not prove that all was lost. The knowledge of the bees is worth a consideration as a part of one's education, and may in after-years be utilized when circumstances have placed both opportunity and necessity in one's path. I have come under this same chain of circumstances, in that I have for the past twelve years found it both desirable and profitable as well as a source of supreme pleasure, to continue the business. The bee business, in order to support a family in the proper manner, must be carried on in an extensive way or the profits from the good years will not make up for the deficits of the poor ones. So the amateur who has visions of extensive operations and a large bank account must first take into consideration that all is not a bed of roses, and that the dark days must be lighted with the sunshine of the bright days in the form of surplus funds saved from the good years. It would pay any Eastern beekeeper to spend a year in the West with some of the big honey-producers, learning the business. That may sound a bit like a "slam" at the Eastern beekeeper, but it is not intended as such. The fact remains, however, that the ideas of the Western beekeepers are so much bigger and broader that one learns by leaps and bounds when under the influence of the Western spirit. I could return to the East now and make dollars where I was not able to make cents when I came here—not because I had not studied all of the technical terms in beedom, and knew all of the fundamental workings of the bee, but because I have learned better than to try to compel bees to put up nice comb honey when the flow is not sufficient to accomplish the object, when the efforts of the bee could have been turned into a commercial value by having extracting-combs to hold their labors during the slow flow.

The amateur should be given as many of the facts in connection with the ups and downs of the business as possible; then if he wishes to try his skill in the business he does so at his own peril. But the brightest side should appear only with the dark side, for they will both have to be faced sooner or later, and their early acquaintance will make the way less fearful in the end.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York



CLIPPING QUEENS' WINGS DETRIMENTAL TO THEIR PROGENY.

"Did you apiarists who advocate clipping the wings of queen bees ever stop to think that such a course might prove detrimental to their offspring, the workers? I should fear that such a course might in time be the means of producing worker bees with weakened or deficient wings, and thus the 'best bees' we are working for might be crippled in wing power."

This is something that was written about quite generally thirty to forty years ago, as at that time natural swarming was the general mode of increase, and with unclipped queens swarms were liable to get away. To obviate this, the clipping of every queen was advocated by beekeepers in all parts of the world. I remember at that time this same question came up and one writer told us that he had worked along that line for forty years with his sheep, clipping the tails from his lambs when they were small in the hope of getting a breed of tailless sheep. In spite of his desires every lamb that was born always had a perfect tail. I know that wonders have been accomplished by way of changing the color of sheep from the black of the original to that of white, and also the character of their wool from coarse to fine, and that of the form of the Southdown with a smooth skin to that of the Merino with its fine wool and folded or wrinkled skin.

It seems to be quite generally assumed that it would be as easy to change the characteristics of the worker bee by the selection of queens and drones as it would be to change the characteristics of other domestic animals by the selection of parents. In the latter case the parents transmit to a greater or less degree their habits, faculties, peculiarities and desires to their progeny, but that can hardly be said in the case of the honeybee, especially when the progeny is a worker. The worker bee presents something along the line of heredity somewhat different from any of our domestic animals. Here is something which our evolutionist friends have not seen fit to tackle. The worker bees are passionately fond of gathering and storing honey and pollen. defending their homes with energy and patriotism as well as performing all the other work that falls to their lot, yet none of their ancestors on either side for untold generations has had either the desire or the ability to defend their home or lay up stores for winter or a rainy day. I am not an evolu-

tionist, but it seems that some of our past theorizing in regard to working for the best bees may have been of little value. Is there not something here that should receive attention in discussing the question of breeding bees up to the highest standard in respect to honey-gathering, wax secretion, white capping of combs, hardness in wintering, or eliminating disposition to swarm, or weakening the workers' power of flight by clipping queens' wings? He who should undertake to create so great a difference among worker bees in outward appearance as there is in domestic fowls between the monster Brahma and the diminutive bantam would doubtless be considered rash. Then why should he be thought to stand on safer ground when he undertakes to make as great a difference among colonies of bees in respect to desire to swarm as there exists between the Rhode Island Red and the White Leghorn in respect to inclination to incubate? And as the inclination to sit is far from being bred out of the Leghorn, how much less than reckless should he be thought who undertakes to breed out of the honeybee the desire to swarm altogether? Is this not also applicable to the attempt to lengthen the tongue of the worker bee so that one or two one-thousandths of an inch may be added so that the nectar in the red-clover blossoms can be reached? To me it has always seemed that the reaching of the nectar in the red-clover bloom could far more easily be obtained by a crossing of the different clovers thru pollenization or selection of those stalks for seed from roots giving the shortest corolla. If the red clover bloomed here to an extent sufficient for seed I should have tried such a selection years ago. But thru hundreds of very minute worms taking their abode in the red-clover heads just prior to its blooming, few if any corollas appear.

But to return: By a like course of reasoning, as with the poultry, what possible ground for fear can there be that clipping the wing of a queen will weaken the power of the worker progeny to fly? If the fact that for many thousands of years at the very least the queen bee as well as the drone has neither exercised nor had the power to gather honey and pollen from the flowers, has neither destroyed nor weakened the desire and the ability of the worker bee to perform that labor, we may safely dismiss any fears we may have harbored that the clipping of the queen's wing will in any way affect the usefulness of her workers.

GENERAL CORRESPONDENCE

PAINT YOUR HIVES EVERY FIVE OR TEN YEARS

BY E. S. MILES

"There are two sides to every question," altho the other side to some questions is rather small. To paint or not to paint is one of these; and not to paint is, in my opinion, decidedly the small side. It is almost universally believed by enterprising and progressive people that painting wooden buildings pays, not only because it adds to the life of the building, but it keeps it in good condition. A well-painted building will shed water in a wet time, and not warp apart in a dry time. Then well-painted, nice-looking buildings are an asset to any place, please the eye, give satisfaction, and are an incentive to enterprise and thrift. But, somebody says, we are talking of painting hives, not buildings. However, the above applies just as well to hives; and, in addition, the hive, standing as it does near the ground, usually with grass around it, in a very damp place in wet weather, is even more in need of protection from the elements. Before we leave the subject of the desirability of painting, whether buildings or hives, let the reader take a trip, in imagination, thru any settled community. Is it not universally true that the buildings of the prosperous, enterprising people are invariably kept well painted? Which is the place containing a tenant, or a poor man struggling to make a start, perhaps, or the booze-fighter or loafer? If it is not the place with old unpainted buildings, porches partly down, perhaps several window-lights replaced with a bunch of rags, then the conditions are different from any I have traveled thru.

Some one says that a hive is different—there is moisture in a hive, which paint will not allow to escape, and that will be bad for the bees. I am not ignorant of the fact that we have two eminent authorities who think bees do enough better in unpainted hives to offset all the advantages of painting and more. With all due respect for them, however, I do not agree. There is a chance that, further east, as the climate is more moist, there might be a difference in favor of unpainted hives; but it would seem that the need for protection would be also greater. But, speaking from my own observation and experience, I know that unpainted hives *here* deteriorate very rapidly. The covers warp badly, the body and floor joints spread and rot. I have had a good many colonies in unpainted hives, having pur-

chased many such, and keeping them from a month or two up to a year in some cases. In addition I kept one colony in an unpainted hive for many years, for the sole purpose of seeing what advantage it was to the bees. I can say positively that I was unable to see any advantage whatever in the unpainted hive. I believe the moisture can be allowed to escape from the hive in more effective ways than thru the walls. I should not want to be confined to that way alone, I am sure; and if I can let it escape in other ways I do not need that way.

If we have made the desirability of painting apparent, let us consider a few points in painting. Painting a hive is similar to painting any woodwork. The hive must be dry, and free from dust and dirt. This is necessary for a lasting job of painting, and especially so on a hive, as they are rather hard on paint. If there are knots or pitchy places they must be painted over with shellac first, and allowed to dry. Any cracks or joints not tight should be filled with putty after the first coat before applying the second. Three coats are necessary on new work for a first-class job, and the paint should be thinned with pure linseed oil for the first coat. I don't save on "elbow grease" in applying it. Rub it in thoroly. Let it dry several days between coats, and be sure it is fairly warm when putting on the second and third coats. I prefer a good grade of ready-mixed paint rather than white lead and oil. I think it sticks better, becomes harder, and, according to my experience, is more lasting. There is a difference in ready-mixed paints, however, and it is advisable to go slow until you know you have a good one.

In repainting hives after being in use five to ten years, more skill is required to get satisfactory results. Some have said that hives may be repainted while in use. The giver of such advice is unskilled in painting. You cannot repaint a hive while it is in use, and yet *do a good job*. Old hives must be thoroly scraped or sandpapered. Any old paint that is loose enough to come off with a good scraper in both hands of a vigorous man *must come off*. Any propolis must either be burned off with a torch or, if not badly daubed, after thoroly scraping, a coat of shellac put on before painting. The bottom-board must be thoroly cleaned and painted on the *bottom* as well as the top.

"That which is worth doing at all is worth doing well" applies especially to painting a hive; for if so painted, and repainted every five to ten years, a hive will never have to be replaced on account of age. A neighbor of mine is now replacing hives that are 12 or 15 years old, as he says they

are too rotten to stand any manipulating. My first hives, purchased 23 years ago, are as sound and tight as ever. I have purchased many unpainted hives not in use 20 years, that I have thrown away because of rotting around the edges so that they were no longer bee-tight.

Dunlap, Iowa.

WHITE CLOVER AND ITS DISTRIBUTION

BY JOHN H. LOVELL

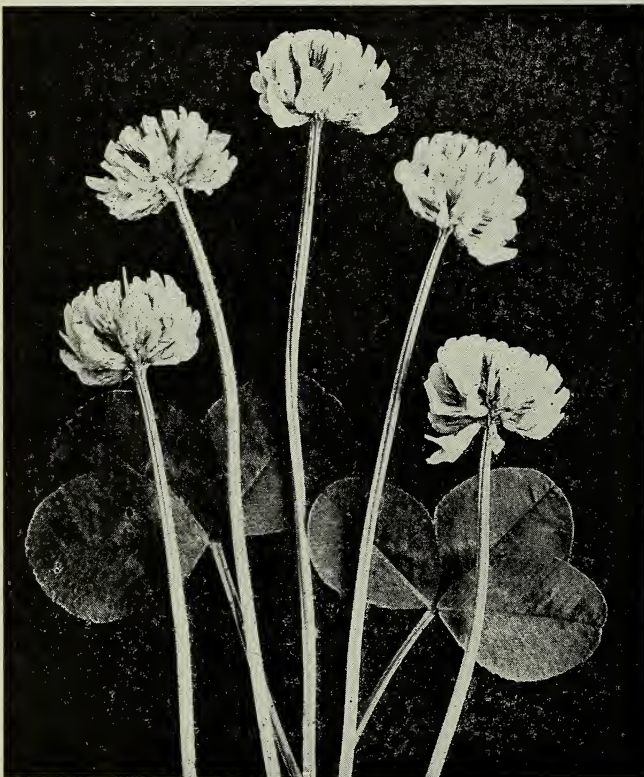
* [The following by John H. Lovell is from the new edition of the "A B C and X Y Z of Bee Culture." We are glad to give it a place in these columns at this time, for we believe the illustrations of this celebrated honey-plant are finer than anything that has ever been reproduced before.—Ed.]

In the central and eastern states no other honey-plant is so universally known as white clover, and white-clover honey is the honey *par excellence*—the honey with which all other honeys are compared. It is a delicious white honey of the finest quality. While not so thick and heavy as goldenrod nor so pronounced in flavor as buckwheat or basswood, it yet possesses the qualities which satisfy the largest number of consumers and fills most perfectly the demand for

a table honey of the highest grade. It is given the preference by most purchasers, and the highest encomium which can be bestowed on any honey is to pronounce it equal to that of white clover. As a confectionery its appearance is most attractive, while for medicinal purposes it is unsurpassed.

In general in America where it is sufficiently abundant white clover usually yields excellent honey harvests, which are not far

from surpassing all records. In 1913, at Marengo, Illinois, Dr. C. C. Miller obtained from 72 colonies, spring count, 19,186 sections of chiefly white-clover honey, or an average of 266.47 sections per colony. The three best colonies yielded 390, 395, and 402 sections respectively. This phenomenal surplus was largely due to a most favorable season consisting of a succession of hot humid days, altho the strain of bees and the care they received were important factors. The flow began about June 1 and continued until the last of August, the bees then gradually changing to sweet clover and heartsease. During this long even flow there were up to September 1 only two rainy days. At other times the rain came during the night, the weather becoming clear again before the bees were ready to begin work in the morning. In central Kentucky, in 1906, 115



White-clover blossom—first stage.

colonies stored 12,000 pounds of white-clover honey and increased to 240 colonies. From the same apiary in the following year the product was 30,000 pounds, while in 1908 drouth reduced the crop to 15,000 pounds.

The flowers of white clover are familiar to every one since the plant finds a congenial habitat in the vicinity of human dwellings. It carpets the lawns, fringes the paths and roads, and is common in the fields and pastures. There are in each head or flower-cluster from 57 to 89 small florets. At first all the florets stand erect, but as the marginal ones are pollinated they cease to secrete nectar and are bent backward and downward against the stem. By preventing useless visits this change in position is beneficial to both flower and insect. When they expand the flowers are white, but they often turn reddish after they are reflexed. The calyx is only three millimeters long, so that not only honeybees, but many other insects are able to reach the nectar. Honeybees also often gather loads of greenish pollen, altho this is not abundant.

DISTRIBUTION OF WHITE CLOVER.

White clover is very widely distributed in the north temperate zone of both hemispheres. The factors controlling the secretion of nectar are very imperfectly understood. While in the United States and England it is usually a good honey-plant, in France and Switzerland, in fact, thruout continental Europe, one may travel for several kilometers and not see a bee on it. At Rouen, France, during one day of white-clover bloom a hive on scales actually lost 300 grams in weight. In various localities in the United States it is also reported to be an almost total failure. At Plainfield, N. J., altho the ground is often white with the bloom a good flow is obtained only about once in ten years. One beekeeper says: "As an actual fact, the amount of clover honey is not measured by the quan-



White-clover blossom—second stage.

tity of bloom; for I have seen the fields white with an abundance of it, but only a fair crop. I can remember one year when we had a great scarcity of bloom, and yet we had a good crop of clover honey. I have also seen fields white with clover but no honey." In the southern and extreme western states white clover is of little importance to the beekeeper, not so much because it does not secrete nectar as because it is not sufficiently common. In many districts the climate is too dry. The nectar secretion also varies greatly from day to day according to weather conditions.

White clover is at its maximum as a honey-plant in what is known as the "white-clover belt"—that is, in the blue-grass region of Kentucky, in Ohio, Indiana, Illinois, Missouri, Iowa, southern Minnesota, and southern Wisconsin, Iowa, and southern Illinois being in the heart of the belt. Even here the nectar yield is often very variable. In some years it is enormous. In others no surplus is stored. At Richmond, Kentucky, according to Virgil Weaver, a normal year comes only once in every five years, viz., 1897, 1902, 1906, 1910. Two full crops

obtained in succession are often followed by several years when the yield is less satisfactory. This difference is largely determined by soil and climate. In wet clay ground in regions where the winters are severe the roots may be much broken and drawn out upon the surface, or the plants killed outright by repeated "lifting" caused by the alternate thawing and freezing of the soil. The destructive work of the frost, however, is much lessened by the natural mulch afforded by the dead vegetation found in waste places and in meadows, which have not been cropped too closely. Snow also offers excellent protection, and, when it covers the ground for most of the winter clover suffers little or no damage. Winter-killing from freezing in well-drained sandy soils or in warmer climate is practically unknown.

In Kentucky, Iowa, and the surrounding territory, where there are light soils, it seems to be well established that there will be a very small honey-flow if the preceding season has been very dry. If there is no rain after July 1 the drouth destroys the old plants of feeble vitality, checks the growth of offshoots, prevents the germination of seedlings, and retards the formation of an extensive root system with the result that there are few blossoms and little nectar the following season. This statement does not call for discussion since all herbaceous plants growing in porous sandy soil suffer if there is a large decrease in the normal rainfall. Altho the injury wrought by the drouth does not become apparent until the next season, it should not be attributed to winter-killing, but to the correct cause—the absence of sufficient moisture in the soil. But if there is a good stand of white clover in early spring, a drouth in May or June, if copious rains follow, will only retard the bloom and delay the harvest. I have seen clover parched by drouth in June, says a beekeeper, and not a blossom in sight. Then came a succession of soaking rains, and, presto! bloom and a crop of honey.



White-clover blossom—third stage.

Similar results have been described at London, Canada. An exceptionally dry fall after August 15 was followed by a dry spring until the last of May when a series of warm rains commenced which continued almost daily until about the twentieth of June. The effect was marvelous. July found the fields and roadsides a beautiful mass of white and alsike clover, and the honey crop was the best that memory can recall. A very cold spring may also cause failure, even if there is a normal rainfall. In 1907 in parts of New York the average temperature of April, May, and June was four degrees below the respective means for these months in other years, and there was no white-clover honey.

Cold rainy weather during the honey-flow will both lessen the quantity of nectar and prevent the bees from working on the bloom; for the best results there must be a series of warm humid days. Finally, where white clover has been grown indefinitely in the same fields the soil conditions may become deleterious. Microscopic protozoa may multiply until they destroy a large part of the beneficial bacteria, or the soil may become acid and require a liberal application of lime. Such land is said to be "clover-sick." Nearly all of northeastern Ohio and

the major part of Pennsylvania show a deficiency of lime. This is also true of Massachusetts where very little white-clover honey is produced. Progressive farmers are learning that by applying lime they can grow white clover and produce honey to the same extent as did their grandfathers.

There is no more important or interesting subject to the beekeepers of "the white-clover belt" than the life history of white clover and its problems. The plant is propagated both by seeds and runners which root at the nodes and finally become independent stocks. As in the case of the strawberry, a single plant may in a favorable season cover with its runners a circle of ground one or two feet in diameter. If these new plants winter uninjured they will

bloom the following season in the same manner as strawberry-runners. The older plants, as is again true of the strawberry, exhausted by multiplying both sexually and vegetatively, are easily killed by drouth or cold. When the ground is densely covered with an old growth there will be little opportunity for runners to root or seed to germinate; hence there may come years when there are few new plants to bloom.

White clover seeded in the spring will produce, if there is sufficient rain, a heavy crop of bloom in July and a fair amount of seed. Much depends upon locality. Clover raised from seed is more valuable for nectar the second season than during the first, but after that it begins to decline in vigor and to yield less honey.

EUROPEAN FOUL BROOD; PREVENTION AND CURE

Why Italians are Practically Immune. A Lemonade Cure

BY ALLEN LATHAM

European foul brood is caused by a germ; but this germ is not spread, as most people think, by its presence in honey, but rather by the bees themselves. Such a statement is difficult to prove, but no other theory, so far as the writer knows, will account for facts observed.

A colony may contract the disease thru contaminated honey, and possibly a great many cases arise thru this cause. If a colony dies of this disease, and is then robbed out, there is little doubt that the robber-colony may contract the disease. But after the disease once gets a footing in an apiary, its spread there is due to other causes.

An inspector once told the writer that, because of the congested condition of his apiary, he would have the time of his life if foul brood once got a footing. In clearer words, he gave me to understand that if one colony got it the adjacent colonies would soon get it, and that it would spread thus thru the entire apiary. When the disease did come the results were peculiarly contrary. My colonies are in pairs, and the pairs are scarcely two feet apart; but there were comparatively few instances in which both colonies of a pair had the disease, and there was absolutely no indication that the disease had spread by moving from colony to colony. Instead new cases would spring up in entirely different parts of the apiary.

This fact gave rise to the following reasoning: Since the disease does not travel by mixing of bees, nor by robbing, how can it travel? At just this point a happening

brought the explanation. At that time there were three or four cases in the apiary, well under control. For several days the bees had been kept in by cold winds and cloudy weather. The weather cleared in the night, and there came a heavy dew with fog. As the fog in the morning hours cleared, the bees flew by thousands, all eager for water. One could scarcely step on the grass without killing a bee, for they were sucking up the dew at a rate I never observed before. Within a fortnight European foul brood appeared in about a dozen more colonies. I could see but one explanation—namely, in sucking up the dew, the germs of the disease, there from the droppings of nurse-bees, found their way into several colonies.

This conclusion immediately suggested the advisability of sprinkling the grass in the immediate vicinity of the apiary with a weak solution of carbolic acid in order to repel the bees while in search of water. If made to go further in their quest for water, there would be a greatly lessened likelihood that disease germs would be gathered up with the water. I would urge every one this spring who finds an outbreak of this disease in his apiary to practice this control measure and report results.

From this the writer was led to study the spread of the disease in the colony itself. Incidentally he found why Italians are practically immune while blacks are not. At first in a colony only one larva (or at least a very few) is diseased. It is perfectly reasonable to assume that a single germ

may be the cause of the outbreak, and that only one bee can get this single cause. The larva or larvæ die; and, in the case of Italians, are quite likely to be picked up and carried bodily from the hive. The more economical black bee first sucks out the juices of the dead larva and then casts out the skin. These juices are then fed to the other larvæ, and the disease spreads rapidly thru the colony. Thus it follows that the Italian bee individually is no more immune to that germ than is the black. It is fatal to both; but the Italian, thru its different habits, appears to be immune.

One can easily see how the foregoing explanation will account for various aspects offered by this disease, and how it in particular explains the cure wrought by the temporary removal of the queen. It also suggests the possibility of medicinal treatment. If one can feed a mild disinfectant, why cannot the germs in the larval food be rendered innocuous?

The older readers will recall that Alexander of buckwheat-honey fame often stated that the coming of the buckwheat-flow did away with European foul brood. The writer thought that possibly there was some mild acid in buckwheat nectar which killed the germs of that disease. Why, then, not feed some mild acid to the bees? This was tried last summer. Some fifteen colonies were thus treated, and in every case the disease disappeared. Mild and severe cases all went, some quickly, others lingeringly. One week of treatment made a most marked effect in some colonies, while in others three weeks passed before improvement was marked. But they all finally became well, and are today on their old original combs, and, so far as known, perfectly healthy.

The treatment consisted simply of feeding the juice of one lemon daily to each colony. Half a pint or so of thin syrup was made, and the lemon juice stirred in. In other words, a rich lemonade was made and fed to the bees.

One of my strongest colonies became diseased, and in about ten days was so foul that one could smell it six feet from the hive. It was rank, fully thirty per cent of the larvæ being dead and rotting. After seven lemons had been given this colony there was scarcely one per cent of diseased larvæ, and in three weeks the colony was entirely well, and stored three supers of honey, equaling colonies which had not been diseased at all. The queen was not caged at all, and no treatment whatsoever was used except the lemonade.

In marked contrast with this colony was another. To make the case of this one

clear it is well to relate its previous history. In July, 1914, this colony was found diseased in an out-apiary. Its queen was caged. By an oversight nothing more was done to this colony till in October, when by chance it was discovered that the queen was still caged, having been there some eleven weeks. She was liberated, and the colony was brought to the home yard for observation. There were still nearly 8000 bees; and tho they were all at that time old, I decided to try to bring the colony thru the winter, and into condition without assistance. It wintered successfully, thanks to the longevity of Banat bees, for the queen was a grade Banat. Tho very weak in the spring of 1915, the queen soon had brood in two combs, and at first no sign of disease showed. But about the time the disease broke out in other colonies this one again became diseased. The old queen died, never having been very vigorous after her long confinement. Another queen of resistant strain was given the colony. Slowly but surely it began to pick up, but showed no marked gain till the bees of the new queen appeared on the scene. Lemonade was administered for about five weeks. By July the colony was clean, and it even went into the super, tho it stored no finished sections.

In speaking of this treatment with other beekeepers I have been told that it was not the lemonade, but merely the stimulating feeding that did the work. If this be true then so much the better. If we can cure European foul brood merely by the feeding of some six or eight pounds of sugar syrup, it should be generally known. I have not put the matter to a test, but I am satisfied that the lemonade will do it if the syrup alone cannot.

Shaking may be desirable in some cases, especially during a honey-flow when the colony can recover from the shock. But the lemonade treatment is desirable when there is no honey-flow. Colonies too weak to shake can be built up to strength, and a cure wrought by the expenditure of the price of a dozen or so lemons and six pounds of sugar. If one will, at the first appearance of the disease, use the carbolic acid as suggested as a preventive, then treat the diseased colonies with lemonade, he can bring his apiary thru the attack with very little loss.

Much has been said about the danger of the reappearance of the disease when the old combs are still in the hive. In my own experience I have found no tendency to that reappearance, the new cases being about equally divided between colonies which have never had the disease before and colonies

which have been treated without shaking. And as a further argument in the favor of the milder methods of treatment, I will say that the disease has reappeared in colonies which had been shaken the year before in the same proportion as there were strictly new cases. The shaking method is urged upon us on the strength of its certainty as a cure. Personally I believe it would be certain provided there was no disease in the neighborhood by means of which new outbreaks will surely come. So long as the disease is in a neighborhood it is foolish to practice the shaking method; but after the neighborhood is cleaned up, then I would advocate the renewal of all combs. Until the neighborhood is freed of disease, then I

say use the milder methods, inasmuch as they are much cheaper, entailing, as they do, less labor and financial outlay, and yielding as certain results.

It is evident that it would be well to requeen all colonies which have contracted the disease with stock which has shown resisting powers. By this, one can more certainly forestall fresh outbreaks of the disease.

All the foregoing relates to European foul brood. I have not yet been given an opportunity to test curative treatment to a colony infested with American foul brood. Will those who have the opportunity try the lemonade treatment and report?

Norwichtown, Ct.

NOTES FROM HOLLAND; OUR BEE-HOMES

BY J. H. J. HAMELBERG

Having noticed that black bees prevail in this country, the reader will not be astonished to hear that the bee-home most commonly found in Holland is the old-fashioned straw skep. We have them in all shapes—square, rounded off at the top, conical, round, with a flat head, etc. In some of them, as in the Gravenhorst skep, movable frames can be put; but in most of them the comb-building is left entirely to the fancy of the bees, some sticks being put inside for the support of the combs. A good many skeps now have an opening at the top, covered with a felt stopper for feeding purposes, and for obtaining a few pounds of comb honey in small wooden boxes which are put over this opening in a good season. But the primitive, conical-shaped skep without any improvement is as yet most commonly seen.

These skeps, altho altogether unfit for modern beekeeping, still offer some advantages. Bees winter exceedingly well in them, especially in the so-called thick-walled ones, and in hot weather they keep the bees much cooler than wooden hives, it being hardly possible for the brightest sun to penetrate these straw walls, nearly $1\frac{1}{2}$ inches thick. Most beekeepers can make these skeps themselves, and, during their leisure hours in winter, they so spend their time, thus saving the outlay for new hives, having the straw for the taking. Besides, no bee-home is handier for migratory beekeeping. A bee-proof cloth is fastened around the bottom with a few nails. In the evening the entrance is closed with a plug of grass, and the skep is ready to be taken any distance. For wintering, the beekeeper, once being sure of a colony having sufficient stores (to

ascertain which he uses a steel bar (Roman balance), or, if he has sufficient experience, he simply lifts the skep), does not take any other precaution than to fill the entrance with some mortar, and, while this is yet soft, bores a hole in it with a stout lead-pencil. Often even this filling with mortar can be dispensed with, when the bees plug up the entrance to a convenient size with propolis. Being always kept under cover (on scaffolds in sheds), skeps will last for years; and, when showing any signs of decay, they can often be repaired with a handful of straw and some binding material, or by plastering them with some adhesive substance, as, for instance, lime mixed with loam. New ones can be bought for about half a dollar apiece.

All these advantages, however, do not make the skep a fit bee-home for the modern beekeeper, and I rejoice to be able to say that hives are coming in use in this country more and more. We have some large apiaries, in which the skep figures only as a curiosity. Some prints of these have appeared in GLEANINGS from time to time. But apiaries in which *hives* figure by way of exception are much more numerous, the best evidence of this being given by our bee-markets at Veenendaal and Bennekom. At the last market at Veenendaal more than 3000 colonies were offered for sale, but not a single hive was to be seen, all the colonies being in skeps.

The fact that there is no standard frame will prove a great hindrance to hives becoming more popular. Many dealers in beekeepers' supplies have their own patent hive, and each of them considers his make the best, of course. Besides, there are yet some German makes on our markets, which

augments the confusion and makes it hard for the less up-to-date beeman to make a choice.

Altho our country is not a large one, there is a perceptible difference in the climatic condition of some parts of it as compared with others, and the bee-flora especially is not the same in all parts of it. Locality, therefore, plays a role with us as well as in the land of the stars and stripes; but it seems that but little attention is paid to this fact by our dealers in beekeepers' supplies. Once their hives and fixtures have given fair results in one locality, they seem to conclude that their system is the best for the whole country. But the beekeeper may find out the contrary to his sorrow. Our beekeepers, not being men of means as a rule, have to stick to the 'hive first chosen, even if it is not satisfactory; and the worst

of it yet is that when, for some reason or other, a dealer goes out of the market, his hive and fixtures, as a rule, disappear with him, and the beekeeper is put to a strait for obtaining his supplies.

The skep has none of the above disadvantages. It answers as well on the low humid sea-coast as on the inland plains and heather-fields. Against the confusion in the choice of a hive stands the simplicity of the skep; and it stands to reason that, as long as the majority of our beekeepers are not convinced of the advantages of hive-manipulation, the rearing of better queens, etc., the skep will hold its sway in this country. For this reason alone, if for no other, it is to be considered urgently desirable for our government to consider seriously the better instruction of our beekeepers.

Soest, Holland.

A ROOMY AND CONVENIENT EXTRACTING-HOUSE ON WHEELS

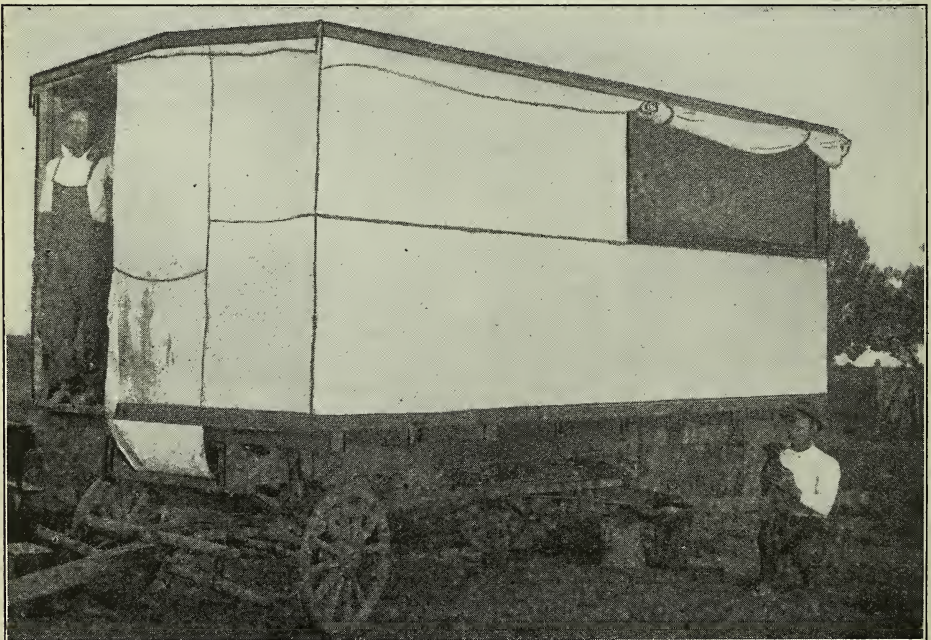
BY EARL C. BIDDICK

My movable extracting-room is 8 feet wide, 16 long, and 6 high. It is screened half way on each side, so that the canvas may be rolled up, making it a cool and comfortable place in which to work.

There are two screen-doors—one where I am standing, and the other on the right

side at the center, so that the honey-supers may be carried in from that side.

The 2 x 8's which rest on the bolsters must be the same width as the bolsters, to prevent it from tipping easily. The 2 x 4's are fastened to the rack with brace-rods, and square irons bolted.



Earl Biddick's extracting-wagon. A framework of 2 x 4 material is built on a 8 x 16-foot platform, and covered with canvas. There is plenty of room for engine, eight-frame extractor, uncapping-box, etc.

The engine and eight-frame extractor are placed in the extreme front end of the room, where they balance well on the wagon. I use two-ton springs for moving the wagon.

A hole is cut in the floor, and a pipe is laid to carry the honey out over the left

front wheel into a tank rot over 36 inches high, large enough for a day's run of honey.

One of the main features of this wagon is that, as soon as one arrives at the yard, and blocks the springs, extracting can be commenced without delay.

Meridian, Ida.

SWARMING PREVENTED BY CONFINING A QUEEN WITH EXCLUDERS

BY J. H. BURNS

Some time ago I described my method of swarm control in *GLEANNINGS*. As I had tried it on only a small scale I was anxious to know if any other beekeeper had used the method in a large way, but I was taken sick shortly after and stopped reading. I intended to experiment further on a larger scale; but as I am still unwell it is not likely that I shall ever be able to do much with bees again; therefore I have decided to describe again briefly the method, together with such alterations as I contemplated trying, in the hope that it may prove useful to some one else. I should be glad to know if this method has ever been tried before, and whether it is as likely to prove effective as my experiments indicate.

The method is a simple one. It consists in inclosing the queen on a brood-frame by covering it on both sides with excluder-zinc. It is better to use a wide-frame; but bulging the zinc in the middle will do. This is done just before the swarming season commences, and before queen-cells are started.

The idea is to cage the queen in the brood-nest, and yet allow the bees free access to her. This, I reason, will prevent formation of queen-cells, and the decreasing brood will induce the colony to give up all notions of swarming. I was able to test it on only a few colonies, but no swarm issued from any of them. Did the decrease in the brood

probably prevent swarming in this case? There is another advantage in decreasing the brood. The useless after-harvest consumers are lessened. Still, a trial with a few hives is not conclusive; but I give the results to the public so that others may reap the benefits if there are any, as I am not able to finish the work myself. Had I been able I would have liked to try caging the queen without using a comb; and I had even contemplated doing without either hunting or caging her majesty. Instead of the ordinary division-board I would have made a tight-fitting one with excluder-zinc. At the beginning of the swarming season remove this division-board from the side, and place in the middle of the hive, spacing the frames over. The queen can now use only four combs, and the brood will diminish a half. Whether this is enough to stop swarming remains to be seen. If not, a six-frame hive could be used, or even a four-frame. In these cases, brood-rearing would have to be provided for in spring by tiering as Dr. Miller and some others do with the eight-frame. Or a large hive with any desired number of these division-boards could be used. But this is all theory. Perhaps this would actually induce swarming by acting the same as contraction; but I think it is well worth a trial.

St. Marys, Ont.

AS GLIMPSED THROUGH THE CAMERA

BY H. H. ROOT

A man may be born smart, but he cannot be born with experience. Experience comes by the slow and sure process known to every one. As Josh Billings used to say, "Experience teeches a good skule, but the tuishun comes pretty hi." A man may learn the theory of swimming, and be able to go thru all the motions, but nevertheless he feels as helpless as any other individual when he first finds himself in deep water.

The beginner in beekeeping may understand the theory of beekeeping pretty well; but he is likely to feel himself in rather

deep water the first time he fully realizes that he is the owner of thirty or forty thousand vigorous bees. It is the purpose of the following set of illustrations to tide the beginner over that helpless feeling that comes to every one when he runs up against a problem which the books apparently ignore entirely. I make no apology for this elementary presentation. We were all there once. The older beekeepers, the ones whose hairs of experience are beginning to turn gray, will please skip the four following pages.



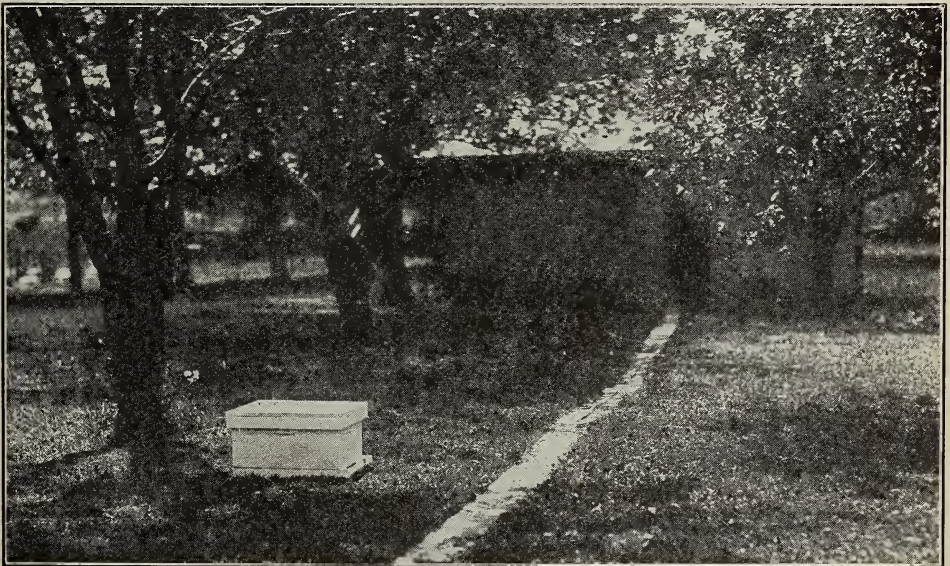
Ever since about two days after you sent in your order for the bees, altho you have not owned it even to yourself, you have been sauntering around the railroad station occasionally, so that if by chance the express agent knew anything about a certain package of bees addressed to you he could let you know. As the days have come and gone you have finally begun making some pointed inquiries, then finally you wrote an apologetic letter merely to see if anything had gone wrong in the filling of your order. A few days later you wrote another letter not quite so apologetic, ending up with a few well-chosen words calculated to bring results. Then when you had almost given up seeing the bees you were summoned to the station, and to the station you went, not able to conceal your eagerness.



You examined the shipping-case carefully, as an experienced beekeeper should, and tipped the case over on one side to read the directions. Here you made your first mistake; for, altho it did no harm in this instance, sometimes it is not at all a good plan to roll the case about nor turn it over on its side, especially if the day is hot and the combs are soft.



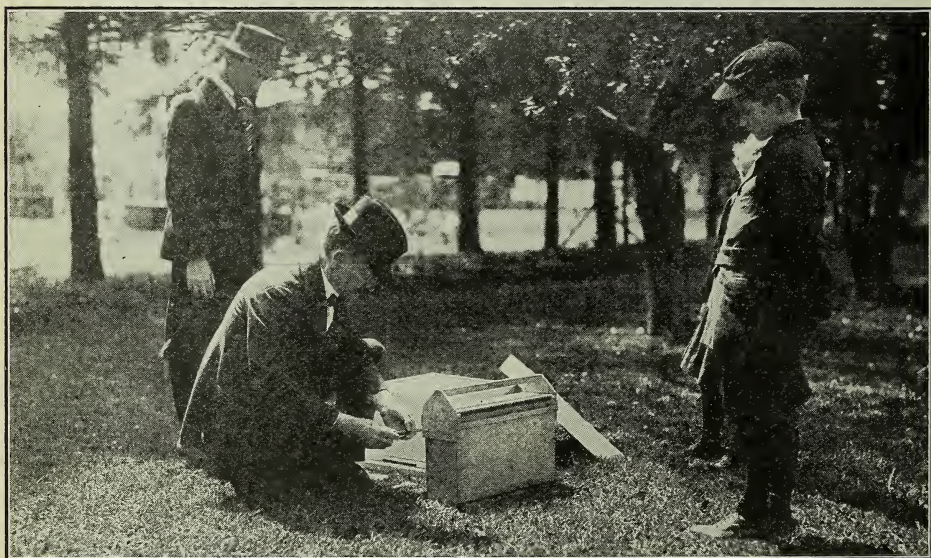
You start for home the proud possessor of ten or fifteen thousand worker bees and an Italian queen. Your children try to look thru the wire screen to see if they can find the queen. They do not know that the queen would not be fooling around on that wire cloth. You feel a little like running all the way home; but you reflect that it would look better to walk quietly, and then, any way, probably it would be better for the bees not to be jolted any more than they have already been.



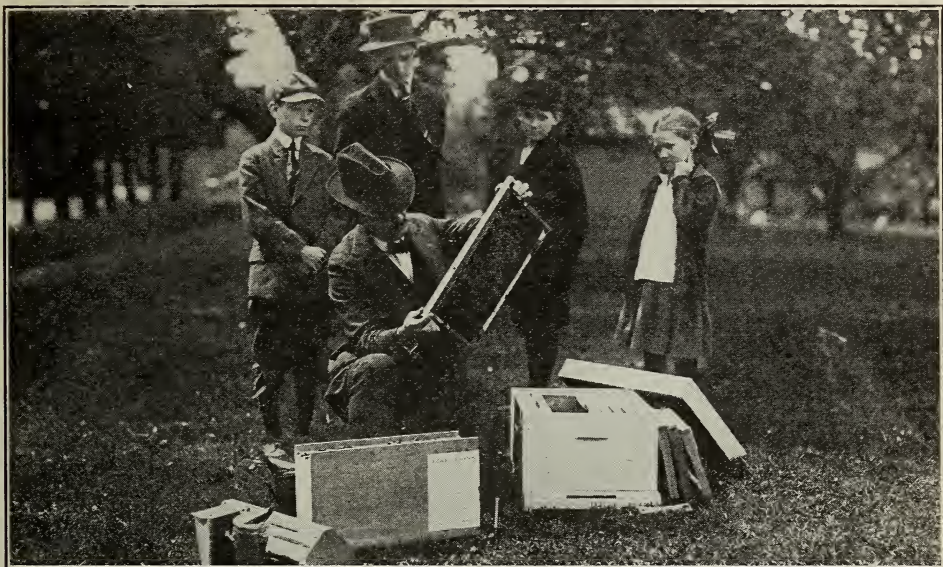
Remember that it is not a good plan to locate the hive with the entrance facing a sidewalk, path, driveway, or any other thoroughfare. It may look pretty and all that, and you may like to stand in the path and watch the bees coming and going; but the bees don't like to have people walking in front of their hive, interfering with their line of flight. It makes them cross and irritable. The entrance should face away from any thoroughfare, and nothing should be allowed to obstruct the front of the hive, whether it be a tree, shrub, or even tall grass and weeds.



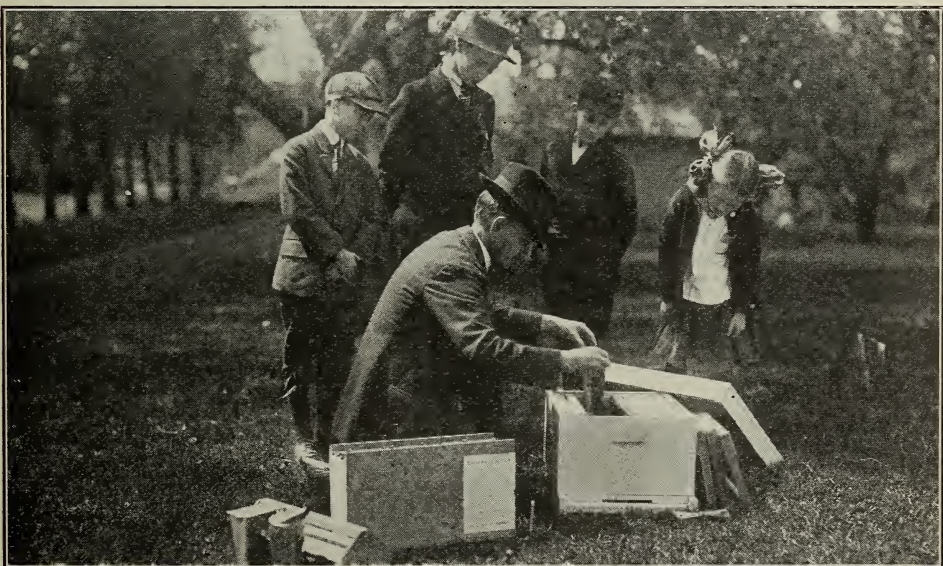
According to directions, contract the entrance of the hive by putting in an entrance-contracting cleat, which is merely a stick of the proper size to fit the entrance, with a notch cut out on the under side for the bees to pass in and out. Unless you buy a full-size colony it is better to have the entrance quite small at the start. A nucleus does not need a full-size entrance. In fact, so large an opening is a positive disadvantage.



Remove the four screws that hold the top of the shipping-case securely to the side. For goodness' sake, don't pry up the tacks from the edge of the wire cloth and imagine that the bees will leave the combs in the shipping-case and crawl into the empty hive. Just before you take the cover off, blow a very few puffs of smoke lightly across the wire cloth to drive the bees down a little. Never try to stupefy bees with smoke. That is not what the smoke is for. Smoke scares the bees, and their first impulse is to load up with honey, so they run for the combs and eat all they can hold. Under such conditions they are good-natured, like some of the higher types of animals.

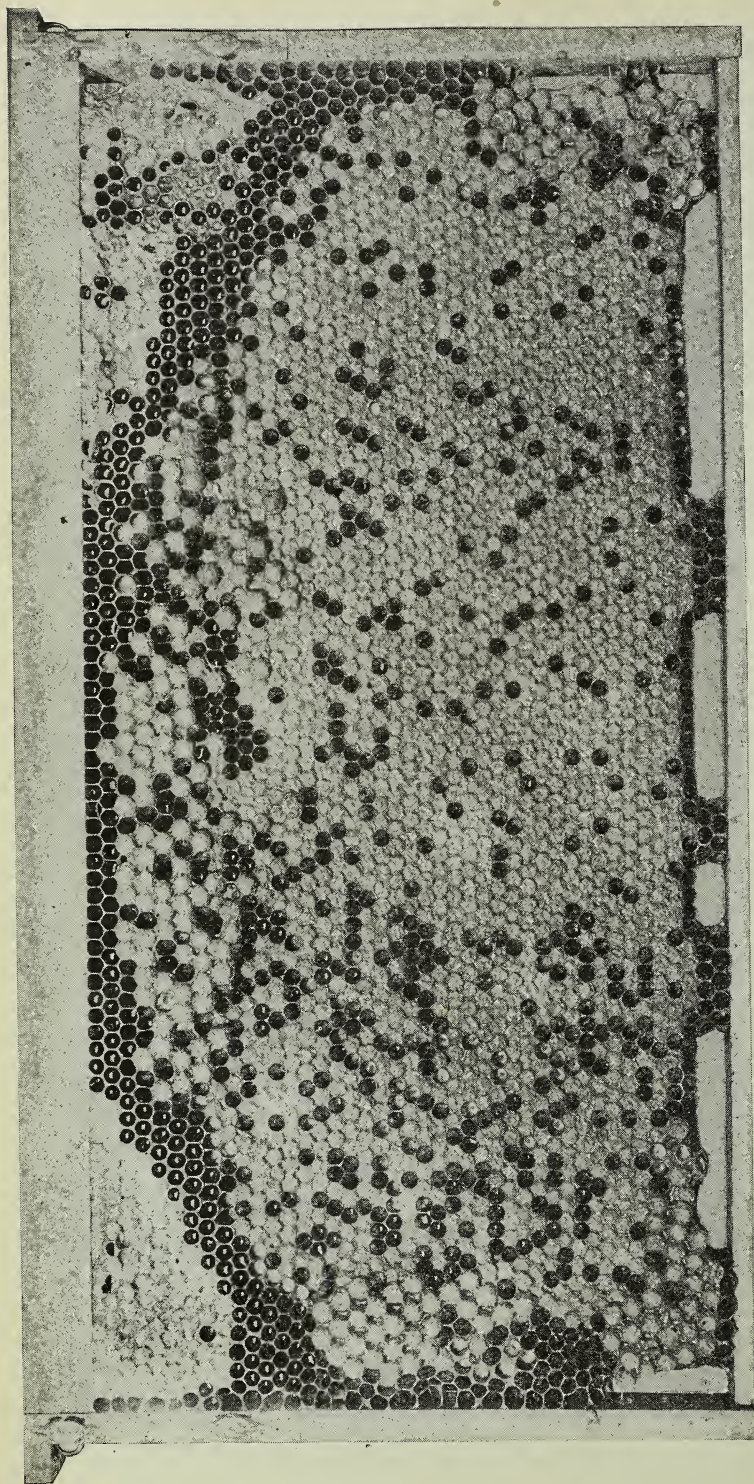


The long-anticipated moment has come. Carefully lift out, say, the center comb, and you are quite likely to see on it the large graceful-looking queen. Tho you may never have seen a queen before, you will recognize her instantly when you see her. She does not look blunt and clumsy like a drone, and there is something majestic in the way she moves.



Carefully lower each comb of bees from the shipping-case into a space made for them by removing empty frames of comb foundation from the new hive. Under ordinary conditions it is, perhaps, best to locate the combs of bees close to one side of the hive, and put a division-board, or follower, next to them on the other side. Gradually, as the bees need more room, they can be given an extra frame of comb foundation.

Watching a nucleus develop into a full-size colony is like watching the development of a child. And to realize that you have a force of little workers bringing in pollen and nectar is solid comfort; but do not think for a minute that the bees work for nothing and board themselves. They need some care. Under certain circumstances it may be necessary even to feed them—but that is another story.



This shows an ordinary frame of sealed brood containing both drone and worker, and a few scattering cells of unsealed brood. The drone brood appears at the top and at the bottom corners. The cappings are larger, and much more convex, than the ordinary worker. In the case of laying workers and drone-laying queens, there will be found drone brood in worker cells. While no larger than worker brood, it has the characteristic rounding or convex surface that makes it stand out conspicuously. When comb is built from full sheets of foundation there is not much drone brood; but sometimes, when a colony is determined to rear it, they will enlarge the cells as they did in the case above. Foundation, in drawing out, sometimes stretches, making some of the cells near the top somewhat oblong as here shown. In these the queen will very often lay drone eggs. The unsealed brood is shown scattered here and there in the open cells, most of it worker, but a little of it is drone. The larva lay curled up about six days old. Some of the older brood is hatched out, leaving here and there empty cells which the queen will occupy again with eggs as soon as she comes back from the other portion of the hive. In the midst of a heavy honey-flow these cells will be filled with honey. Sealed honey is shown in the upper corners; and the unsealed is shown just above the brood, and below the capped honey. The color of the cappings over honey is usually white. Sometimes it is dark and very often is transparent, showing the honey behind. The capping over brood is more fibrous and from a light to a dark brown. It also shows quite clearly the hexagonal shape of the cells. The capping over honey shows this less plainly.

N. B.—This cut and the matter appear in the next edition of The A B C and X Y Z of Bee Culture under the heading of Brood.

EFFICIENT PRODUCTION OF EXTRACTED HONEY IN CALIFORNIA

Conserving the Strength of what is the Equal of a Double Colony

BY G. W. BERCAW

By exhaustive experimenting we have developed the following plan of producing extracted honey on a commercial basis, assuming, of course, that there is a constant flow of nectar suitable at all times, and under normal conditions. This plan, however, might not work successfully in a colder climate; but we have found it is about the only one, so far as we are able to determine, that is efficient in our California climate.

Toward the close of the season, or after the rainy season has begun in autumn, put a full-depth super over the brood-chamber. Do not disturb the brood-chamber during the last extracting. This extra super is to be provided with full-drawn combs, ready to fill with brood, honey, and pollen, as the bees may feel disposed thru the winter months, when it is warm enough for activity, and on toward the spring. Do not put a queen-excluder between the two supers, but allow the bees and queen full access to all portions of the hive, above and below, in order that both supers may be filled as much as possible with brood and honey at the very earliest flow in the spring, which in some localities is as early as February.

Keep a close watch before a heavy flow comes on, as, for instance, in localities where the orange furnishes the flow, or the deciduous fruit-trees. In some instances both of these flows occur at about the same time. About 21 days before the honey-flow put a queen-excluder between these two supers, securing all the brood and stores above it possible, taking each frame out and shaking it in front of the hive to make sure that the queen is below in the brood-chamber. This shaking should be done after the excluder is in place. This gives an extra-strong colony of bees, boiling over, so to speak, with queen below and an excluder between the queen and the upper story.

When the heavy flow comes, these bees will fill the upper story with honey every ten days during the flow, so long as they do not swarm out. The honey may not all be capped within this time; but rest assured nature has taught them when to cap it, and it will be done exactly as nature intended it should—when it is ripe. This will depend upon the weather conditions, and on the rapidity of evaporation, etc. If the work of capping appears slow, and honey seems to be coming in fast, give the bees more room by adding another super above the one already on.

We have given this plan of manipulation a complete and comprehensive test, and find it the best one we know of. Of course, if the colony should cast a swarm it will not store the honey that it would under non-swarming conditions. When putting the excluder between the supers it is a very good plan to examine each comb below, and cut out all drone comb that may show up there. I presume that all beekeepers who take care of their yards work all the drone comb into the extracting-supers, and the worker comb into the brood-chamber. Notwithstanding this, drone comb will be worked into the corners and other vacant places in the brood-chamber, especially during the early spring season. This can be checked somewhat at the time of putting the excluders between, by cutting it out, as much as possible. Sometimes it is a good plan to transfer to the upper story at this time some of the combs that are below, and full sheets of foundation substituted below. This procedure must be left entirely to the judgment of the person working. By close watching one will be able to get a good strong colony of bees at the right time—the whole solution of getting a good honey crop—getting really two colonies of bees crowded into one. Such a colony will soon expand from the lower super into the one above for want of room. The queen must be kept below at all hazards. There is room enough below in the brood-nest to supply young bees; and with sufficient room above, the bees will not crowd the brood-nest so as to cut off the supply of young bees, so essential, of course, to the prosperity and success of the colony as a whole. Of course there will be a good many drones in the super above the excluder, which cannot escape, but they will soon die and fall to the excluder below, where they can readily be brushed aside. They are of but little account at this time, however; but if one desires to have them fly, the hive-cover should be raised a little, when they will soon all escape. These drones are of value, in large yards, where young queens are mating more or less every day.

It is quite true that this plan of manipulation takes a great deal of time if the yards are large and extensive; but what else can you expect if you want a good crop of honey? A beekeeper gets out of his apiary an amount just in proportion to what he puts into it, just the same as a rancher or farmer gets from the soil a crop in propor-

CALIFORNIA

tion to what he puts into it. It means work, work, work. A single day in the early part of the season is worth three a couple of months later on.

This method might not be quite so successful in a country where the season is short and heavy; but here in California our seasons extend over many months, some months more heavy than others; but there is very little time during the year when bees cannot fly, more especially so in the Valley country.

At all events queen-excluders should be used in the production of extracted honey, as it is the only way to be sure of keeping the queen below the extracting-super. And where brood of any age is allowed in the extracting super, clean, wholesome honey cannot be produced. Do not keep excluders on during the winter months. Remove them in the fall, or about the time that the rainy season commences here in California, allowing the bees and the queen full access to the entire hive until the proper time comes the

following spring. When the excluders are again put on, the brood that is in the upper part will all disappear, as before mentioned, in about 21 days at the limit; and as fast as the young bees emerge, these cells will be filled with honey and other stores, thereby giving more capacity and efficiency in the manipulation of each individual colony.

I assume that the bees are of good stock, strong and healthy. They must be requeened every two years at least. It is a good idea to requeen a portion every year. For example, if the yard contains 200 stands of bees, requeen 100 each year. This is equivalent to a full requeening every two years. We think it pays any beekeeper to requeen in this manner. Either raise your own queens or purchase good stock. At all events, keep good strong vigorous stock. We prefer the three-banded Italian or the leather-colored queens in preference to all others, as they seem to be more or less immune to disease—at least this is our observation covering a good many years.

Glendale, Cal.

CONTROL OF SWARMING IN OUT-APIARIES

The Science of Keeping all the Bees together and Working in the Supers

BY M. W. HARVEY

Swarming is the fulfillment of a natural impulse of bees, and is governed by certain fixed laws; hence if man is going to control these fixed laws he must use other laws, and be ready when the time comes. I am a comb-honey producer, and do not follow any one fixed law in the control of swarming, so I will give them as used at different times of the season.

We will suppose the main honey-flow is just starting, and we have used every effort to get all colonies up to the same strength during the six weeks previous, and they are now at the swarming-point. The first thing is to get the supers on. There will be no swarming until a week to ten days later. If we are to keep those bees together, and make them work for us we must get busy. My first method is, examine every colony and every comb with brood in for queen-cells. When one is found with cells put a new hive in place of the old one. Find the queen, and place her in the new hive with the comb she was found on, and be sure there are no queen-cells on it nor even stubs, or the bees may start cells again and swarm. Now place the super on the new hive and an empty super on top, if the first super is well started, say half full or better. Shake all bees in front of the new hive.

Now, if increase is desired, take that old hive of brood and place it on top of a medium strong colony that is not doing any super work, with a queen-excluder between. They will finish those queen-cells and they will be as fine cells as any raised by any other method.

In one week to nine days go over this yard again, and this will be the big swarming week. Ten per cent or more will be getting ready to swarm. Now is the time to make all the increase. The swarming fever is on, and we have all the ripe queen-cells we need. If enough increase is not made from what were shaken, and there are cells to spare, divide these old hives of brood.

If no increase is wanted, take the brood and build up weaker colonies or place it back of the new swarm, and each week shake a few bees into the new hive until all is hatched and united again. These will make powerful colonies that may swarm again during the second flow.

This is my favorite method, and surest. It has been condemned by many because it is much work, and therefore a failure. I think I can account for the failure. A lazy man should not attempt to handle more than one apiary with natural swarming. The

man with out-apiaries must know what he can do and how many colonies he can handle in a day. I have taken care of 700 colonies alone, in four yards, thru the swarming season, and handled every brood-comb every seven to nine days—without losing a swarm. I admit it takes lots of hard work, and everything must move like clockwork and without lost motion.

The most failures in this method have been caused by shaking colonies that have never thought of swarming, and that might not swarm during the season. I never shake until I find cells started.

Other failures consist of weakening the old hive of brood so that the brood is chilled, and the new swarm dwindles. A colony to shake should be in the same condition a natural swarm would be. It should be strong, and nearly all the brood should be sealed. When shaking, leave about as many young bees in the hive as a natural swarm would leave. A shaken swarm that has cells nearly or entirely sealed is almost sure to swarm out in 24 hours. The queen in such cases should be clipped or caged so she will not get away.

Another method is to lift the hive from the bottom-board and look for cells on the combs. This is a quick way to get over a lot of colonies. I use it somewhat when I get behind and swarming is getting ahead of me. But I miss some, as it is hard to see cells in a strong colony unless they are on the bottom of the combs.

If no increase is wanted, and there are no weak colonies to build up, I shake in with the swarm all the young bees out of those old hives left back of the shaken swarms the week previous. That gives them a lot of young comb-builders and a big boost, and swarming is done with. I have taken off three finished supers by the time their brood-combs were filled out from one-inch starters.

Those old hives of sealed brood without bees are looked over carefully, and all queen-cells pinched off. I use those hives to shake new swarms on and put on plenty of super room, and then swarming is cured.

Another method which I use mostly in the second flow, when hives are full of honey, and frames are hard to get out, is to raise the hive up from the bottom; and, when queen-cells are formed, cut out all cells, then exchange locations with a weak colony. That ends the swarming in one operation, and shoves the other colony into the supers lively.

Still another method: If I want a moderate increase I shake one colony clean of bees; then the next one found wanting to swarm I put on a new location and place the old hive of brood in its place and give a caged ripe cell.

If the reader will notice, in all of these methods I aim to keep all my bees together, and all strong, at all times, and working in the supers.

Reno, Nev.

WHY I CLIP THE WINGS OF A QUEEN ON BOTH SIDES

BY R. F. HOLTERMANN

So Dr. C. C. Miller wants to know why I clip the wings on both sides of the queen. p. 345, May 1. The queen appears to me to look very awkward, backing to lay into cells: There may be nothing in this, but she certainly looks like a cripple with one side clipped and the other not. In this matter I followed the advice of the late Wm. McEvoy, and am satisfied with the change.

In my estimation there is a much better way of marking a queen's age. We used to clip the queens before the colonies were taken out of the wintering-cases. This necessitated putting the record on the wintering-case and a transference of this record to the hive when it was removed from the case. This gives extra thought and work at a time when one is in a hurry. So I now follow the idea given to me by my son Ivar. He scrapes the propolis from the top of the top-bar and marks when the queen is clipped. My system of marking the age of the

queen is to put down "C1/May15/16." if she is found and clipped that day. If she is *found clipped* on that day the top-bar is marked "C1d/May15/16. If she is found clipped, and there is a record that she was found clipped (C1d) the previous year, that means that the queen is nearly three years old.

I prefer this system to having the record on the queen for the queen may be anywhere in the hive; but there is no difficulty in finding it on the top-bar.

While writing in reference to clipping I have come to the conclusion that it *may* not be well to clip the wings too closely, for there must be some circulation thru the wings, and probably the nearer the body the more this is interfered with.

BEES DRIFTING.

The editor of GLEANINGS appears to be under the impression that with the four-colony winter-cases the bees drift. Let me

say that, during the years I have used those cases, I have not one particle of evidence in that direction. There are many conditions which bring about a considerable variation in the strength of colonies that are no evidence of drifting. In the next place, with the entrance in one case facing north and south, and in the next east and west, and the row of cases broken in that way, I do not know of any better way of preventing the drifting of bees.

There is one thing I have noticed; and that is, that the more anxious the bees are

to get out of the hive, and the higher the outside temperature, the more the bees will drift, other things being equal. If bees have been wintered poorly, owing to poor stores or for some other reason, or if they have been hauled in hot weather, as for hauling to buckwheat, they will drift when opened during daylight. I would ask if bees drift when packed four hives in a case, and the entrances changed every second case. Under what conditions will they not drift? I know of no better plan to prevent it.

Brantford, Canada.

ANOTHER ONSLAUGHT ON AMERICAN FOUL BROOD

BY JOS. J. ANDERSON

On p. 586, July 15, 1916, I outlined some very perplexing experiences with American foul brood.

I make this quotation: "A mile from my two yards is an apiary where I know some foul brood has existed. Have my bees carried the disease from there after being shaken?" The editor comments: "In answer to the last sentence we say, probably, yes. We do not believe the recurrence of foul brood in your yards was due to the fact there was only one shaking instead of two, or that the Baldrige plan was unsafe, altho if one uses it he takes a little risk; but if we had much disease in a yard we would use it; for to destroy good brood in a strong colony is a waste. By the Baldrige plan this is all saved, except what is actually dead or diseased.

"To sum up, it is possible that some of this recurrence was due to the Baldrige plan; but we venture the assertion that 99 per cent, if not all, came from the yard a mile away. We suggest that Mr. Anderson buy out that yard or get his neighbor to treat it. If two shakings are necessary to make sure to cure American foul brood, we are willing to be shown."

With reference to the Baldrige plan, if it is used at all, great care must be used to see that the hive is absolutely bee-tight. No opening anywhere can be tolerated where a single bee can enter the hive. Then instead of the funnel I would suggest the use of the bee-escape tacked over the auger-hole, since I have discovered that bees will enter the hive thru an eight-inch funnel, tho the hole at the end be large enough for only one bee to pass at a time.

Now for a sequel to my former article: July 3, finding the honey-flow nicely started, I proceeded to treat the diseased bees. I shook 103 colonies on this date as follows: First, from each diseased colony I took all

frames that contained no brood, tiering the same up in the cellar away from danger of being reached by the bees. Three helpers made it possible to do this in a hurry, tho there was not the least inclination to rob on the part of the bees. The object of removing these frames was to make the work of actual shaking more rapid. While doing this I marked the weak colonies, some twenty in number, on which I intended to tier the brood. Here let me emphasize the fact that, for treatment to be successful, colonies must be very strong in bees, even if it is necessary to double up. I remember at one time treating seven colonies for a neighbor. These were all shaken into two hives, and they made rousing colonies that stored a lot of surplus. This was seven or eight years ago, and no sign of the disease has since shown up in his yard.

I next removed all brood from each colony, inserting one old empty comb. This helps to keep the bees contented, so that they are not as much inclined to swarm out. To avoid shaking out the honey which was coming in heavily, I was forced to brush the bees instead of shaking. I had previously prepared a lot of hive-covers by attaching on the under side several narrow strips of foundation. The process of removing brood, brushing the combs, placing in the old empty comb, and placing on the prepared cover, did not occupy over one minute per colony. It is important that there be sufficient help to remove frames, brush off bees, and tier up the brood with the least possible exposure. Notice that there was no changing of hives at this shaking.

On July 7 I administered the second shaking, proceeding as follows:

A clean hive with full sheets of foundation on wired frames was placed conveniently near each colony to be shaken. The old hive containing bees to be shaken was set



SETTLED IN THE SADDLE.

From remote history bees have been known to choose odd places for a home; but it remained till recently for a swarm of bees to "settle" on the saddle of a bicycle. The illustration shows a swarm that took possession of the seat of a bicycle on one of the main business streets of Whittier, Cal., on a recent summer afternoon. The time of day was a busy one, and the usual passing of pedestrians, shoppers, autos, and other vehicles was going on. The bees alighted in front of a confectionery store, and completely covered the seat of the owner's wheel. A curious crowd soon gathered, but kept at a very respectful distance. A beeman brought a hive and soon coaxed the little workers into it.

MIL0 HUNT, Whittier, Cal.

about two feet in front of the stand, and the new clean hive set in its place with six frames removed from the middle of the hive. One attendant carefully raised the cover, and another the old comb that had been inserted. One thump on top of the hive-body dislodged all bees, which fell into the hive, and the newly drawn comb was removed by a third attendant from the hive-cover into a covered pail. A few strokes of a Coggs hall brush (for no thin honey prevented the shaking of the bees) removed the bees from the old comb, which was placed in a tight box fitted with a cover.

This new wax and the frames were removed to the cellar as fast as the box and pail were filled. Then all bees were dumped into the clean hive, and the cover placed on. I lost a few queens, but not many—not enough to pay for the time and trouble, and risk from exposure in hunting them up.

About 12 days from the first shaking, the weak colonies (now very strong) on which brood had been tiered, were shaken. The combs were all stacked in the cellar. The procedure previously outlined was followed, the second shaking occurring four days after the first. This finished the job, and ought to show satisfactory results. I no-

ticed no recurrence last summer; but I found four cases in the outyards from which diseased bees had been hauled home. This season's inspection will be the test of last season's treatment.

As the editor suggested, I looked after the neighboring apiary a mile away, having the appointment as deputy state inspector, and found a very serious condition, which perhaps accounted for the very unsatisfactory results of my 1914 treatment. Out of 47 colonies I found 25 diseased, most of them fairly reeking. A brother with 17 colonies just over the division fence had 7 colonies out of 17 diseased. All infected colonies were burned, and the ashes buried, and all old hives and old combs on the premises were destroyed in the same way. The strange feature of this experience is that these men who claim to have handled bees for thirty years, and claim to know all about foul brood, did not even know that foul brood existed among their bees until I called on them. I found old infected hives standing open, combs scattered in all directions—an ideal condition for the spread of the disease.

Last season, in the two counties comprising my district I inspected some sixty

one apiaries and over 2800 colonies. Twenty-three apiaries were diseased. Of the 2803 colonies I found 375 diseased, of which 215 were burned and 160 treated. All bees in box hives were transferred to movable-

frame hives. With the work so well under way, and an increased apportionment for this district, we are hopeful of very beneficial results.

Salem, Ida.

NOTES FROM GERMANY

Honey; Some Qualities Not Generally Known. Reason why Very High Temperatures Should be Avoided when Liquefying Honey

BY J. A. HEBERLE, B.S.

Honey is not a substance with a constant definite chemical composition, but a very complicated compound varying considerably, because it is derived from a large variety of nectar-secreting blossoms and plants.

Dr. Haenle, in his "Chemistry of Honey," gives as an average for a large number of analyses of pure honey from different parts of Germany the following:

Dextrose, 42 per cent; levulose, 35 per cent; saccharose, 2 per cent, making it a sugar content of 79 per cent, water about 20 per cent; nitrogenous matter 1 per cent; mineral constituents, 0.2 per cent; phosphoric acid, 0.02 per cent.

Of the 79 per cent of sugar content in honey, 77 per cent is in a form that, without any action on the part of the digestive organs, is immediately assimilated and goes into the blood.

Any one who, because of much physical exertion, becomes so tired that he feels completely exhausted, will find that, by taking a spoonful or two of honey direct, or with water or a little bread, in a few minutes he will be relieved of his fatigue: his strength is restored, so that he can again undertake a task that requires much exertion.

Because this sugar in honey is in a form to be assimilated without taxing the digestive organs, Dr. Feehlmann (*Schw. Bztg.*) called it "physiological" sugar.

For the mineral constituents and their importance to the human body, see GLEANINGS, p. 797, 1915.

ENZYMES IN HONEY.

In addition to the sugar, mineral matter, ethereal, and albuminous bodies, there is something very important in honey that has received but little attention. Dr. Thoeni said in a lecture (*Schw. Bztg.*) that, years ago, Erlenmeyer and Planta, two eminent investigators, showed that in the preparation of honey from nectar cane sugar was converted into invert sugar, and starch into dextrin and sugar. This change is caused by enzymes or ferments. Auzinger showed later that, besides the ferments which made

the invert sugar called "invertose," and those which change starch into dextine, and sugar called "diastose," there is still another ferment in the honey called "catalose." This ferment has the power of converting hydrogen peroxide into water and oxygen. Marpmann claims to have found still other enzymatic bodies in honey; but this has not yet been corroborated.

The nature of these ferments is not quite understood. They seem to be bound to the albumen molecules. Only the effect they produce is known, but not how they come into existence—how they are produced. It is only known that they are derived from living cells.

Ferments, for the live process of all plants and animals are of the utmost importance. For instance, in the digestion and nourishing of the body they are indispensable since without them assimilation is not possible. The ferments are very susceptible to heat. Temperatures less than 212 F. injure them; and if the heat continues for a longer period they are destroyed. Because the ferments are derived from living cells, their functions are called biological.

From the importance of these enzymes in the process of digestion and assimilation it is obvious that honey, not only on account of the "physiological" sugar of which it is composed, but also for the presence of these ferments, is far superior to all other sweets, no matter how costly they are nor how pleasant they may be to the palate.

At present it is not possible to produce these ferments in a pure state; besides, their production would be so costly that they could not be added to any of the sweets on the market.

Besides these ferments there is a specific albumen present in honey; but whether this is altered by high temperature is not mentioned.

I have for years recommended to my patrons in liquefying honey not to heat above 122 degrees F., believing that a considerably higher temperature would have an un-

favorable influence on the aromatic principles in honey. Whether I am correct in this I know not.

More investigation seems necessary to determine the influence or the alteration honey undergoes when strongly heated. Dr. John published in the *Muench. Btztg.* a series of experiments and the methods employed on the property of honey to change starch

into fermentable sugar. Common sugar must first undergo a change before it can be fermented. He finds that up to 50 degrees C. the diastase in honey retains its full power to change starch into sugar; but at 55 C. this power is reduced; and at 65 C. (149 F.) this power or property is completely destroyed.

Kempton, Bavaria, Germany.

THE GRAVITY METHOD OF STRAINING HONEY

BY W. H. CRAWFORD

For ten years I worried with honey-strainers, using several different kinds during that time. In this climate honey dries to thick candy very quickly when spread out and exposed to the air, and on that account honey-strainers clog up so often that they are a nuisance.

Twelve years ago I eliminated strainers from the list of devices used in the production of extracted honey. Tall tanks are provided, the size and quantity depending on the amount of honey to be handled. One tank at a time is filled brimful of the honey just as it is taken from the extractor. The honey is allowed to remain in it at least three days, if possible, by which time gravitation will have completely separated the bits of wax and pollen or propolis from the honey, pushing them clear up to the very top of the tank, where they can be taken off with the hand almost as easily as the peal can be taken from a banana.

The second tank is being filled while the first one is allowed to settle thoroly, and likewise the third tank is filled in the same manner, giving ample time for the honey in each tank to be thoroly separated from all foreign substances that may have been in it at the time when taken from the extractor.

In drawing the honey out of the tanks, care should be taken to leave enough honey in them to stand four inches above the gate, thus preventing bits of any kind, or foam, from being filled out into receptacles.

A QUICK METHOD OF FILLING PAILS ACCURATELY.

In filling ten-pound pails we first weigh 10 lbs. of honey into a ten-pound pail. This pail is put on a board of any thickness, 7 x 7 inches square, cleated across the grain at one end with a thin cleat, and cleated at the other end with a cleat of just the right thickness to incline the board when placed on a level floor, to the proper angle that will barely cause the honey in the pail to touch the rim on the lower side. Two nails

are driven near the lower edge of the board, which prevent the pail from sliding off.

This board is put beneath the gate and the pails are placed on it to be filled. It is perfectly easy to fill the pails just right with this device, because it is so easy to see just when the honey barely touches the rim at the lowest point.

Any size of pails can be filled the same way by making a board for each size, and by using the same principles as described above.

Being so very handy and cheap, we never think of using any other method of filling pails. Should the weight of the honey change at any time, the board can be easily adjusted so that the proper amount of honey desired will fill the pail so that the required weight of honey just barely touches the rim of the pail on the lower side.

Roswell, N. M.

[The gravity method of clarifying honey, as mentioned by our correspondent, has been tried under all conditions. We do not know who was the first to use it. Some have felt that when the honey is thick and waxy the gravity method is not practicable. However, the thick honey simply means that more time must be allowed—hence more tanks. No doubt there is a limit somewhere after which the honey would require heating in some way.—Ed.]

No Use in Drawing a Color-line.

I am much interested in the knocks on the goldens. I have a few queens from the best breeders in the United States; but I have one black colony that I got of a farmer that beat all the others last year, and wintered finely. On May 1 it had eight frames of brood, and without feeding or attention since last fall. These bees were wintered outdoors in a double-walled hive, and are very gentle. I realize they are out of date; but as long as they give me the most honey I will stick to the blacks.

A Beginner.

Heads of Grain From Different Fields



THE BACKLOT BUZZER

The doctor who patched up the old beetree hunter wanted to know if they were really wild bees he captured. The patient said the bees weren't especially wild, but the owner of the tree was.

June Faith.

Such countless questions darkening our days!
Such wide-eyed wonders drifting down the ways

Of living and of laughter and of light,
And thru the weary darkness of the night!
"Why?" and "Why?" and "Why?" from
soul on soul,

And "How?" and "Whence?" and "Whither?"
thru the whole

Unending and unsatisfying cry
Of climbers on the trail that leads so high.

O shaken souls, and stirred! why strain to
know

These dim far things when bees are humming
so?

Let go your strangling questions—this is
June!

Let go and listen—life is all atune!
Come hear her birds and bees—why, all my
hives

Resound with rapture of a million lives
That flash, ecstatic, thru a few swift hours,
And live and live and live with all their
powers!

By fields of clover-bloom wild roses nod.
Come, climb and sing and leave the rest with
God.

Nashville, Tenn.

Grace Allen.

How to Make Increase by Feeding; What Feeder to Use.

My little beeyard is doing finely, having here a number of good days during fruit-bloom, some of which is still on. The strong colonies have brood-chambers full of honey and brood, and supers with baits are now filled with bees doing something, anyway.

What, in your opinion, is the best way for me to increase the coming year to 100 colonies? It is a rather slow process building up from the few I have, 12 colonies now, by stealing a comb now and then from them and ordering packages in the spring from the South.

How, where, and for what price can I buy combs with honey in them, say 200 combs in Hoffman frames, clean and free from any fear of foul brood? If I had these combs I could have 100 colonies by a year from now, and from that on it would be easy. I do not like to buy bees in hives.

Youngstown, O. C. E. Blanchard, M.D.

[It will be perfectly feasible for you to increase your twelve colonies up to a hundred. The writer did this some years ago, or, rather, we took ten colonies, supplied them with laying queens, gave them only frames of foundation, increased up to over 90, and secured a crop of 2000 pounds of honey, but the conditions that year were favorable. They are very favorable this year, and we see no reason why you could not duplicate the feat.

In order to make the increase rapidly, and not waste time, it would be necessary for you to buy untested queens. However, by making a smaller increase, or by running a series of nuclei, you can raise your own queens. You would not need very many nuclei, but simply enough to furnish you young queens as fast as the increase was made, which, of course, would be rather gradual.

The Alexander plan of increase we would consider as good as any; but under your conditions what you will need to do after the honey-flow is over is to divide your colonies up and supply each division with a laying queen to start on at once, because it will be only a waste of time to make a division unless the colony has its own queen.

We would use the Boardman feeder and stop up all the holes except one. Make a syrup of about 50 per cent water, 50 per cent sugar, by weight, and with the holes all stoppered up but one, you will be able to make the syrup in the feeder last about 48 hours. A slow feed to the bees after the honey-flow is over is much better for increase and getting brood than a large amount of feed at one time. The ordinary open feeder, like the Doolittle, the Miller, or the Alexander, or even the Simplicity, gives the syrup too rapidly. It excites the bees, they rush out into the air, start more or less robbing, caus-

ing the bees to waste their energy in unnecessary flights to discover where the unusual supply of food is coming from; but the Boardman feeder, on the other hand, when it is regulated down so that the syrup goes to them very gradually, does not cause this excitement, and the bees go on breeding and thus save themselves unnecessary wear and tear in going to the fields.

We don't advise buying combs containing stores. It is very doubtful about your being able to obtain any that would be free from disease, or, rather, there would be the danger, if disease of any kind starts among your bees, you would have your labor almost for naught. Your better way is to use frames filled with foundation, wired of course, and put one of these between two frames of brood during the warm weather; but do not give these frames too fast. You will have to exercise considerable judgment in that you do not spread the brood too much, thus causing some of the brood to chill. There should be a fairly good force of bees to take care of the brood as it hatches out.—Ed.]

No Trouble from the Spray on the Cover Crops.

Wesley Foster, Feb. 1, page 96, in the paragraph on spraying and beekeeping, takes too gloomy a view—as to the destruction of bees on account of spraying fruit-trees.

I have 22 colonies within a stone's throw of our 40-acre apple-orchard, which we spray very thoroly three to four times a year, and I assure you that we hardly miss a blossom. We do not ask our hands how much they spray a day, but we ask them how thoroly they have done their work.

The first spray is usually as soon as the cluster of flowers separates from the bud, and the second spray when the petals of the flowers begin to drop. My bees, in blooming time, naturally go in streams to this orchard, and in three years of spraying I have never found a dead bee in the orchard, and have not seen more dead bees around the entrance to the hives than what will die of old age.

We spray with lime, sulphur, and arsenate of lead. All those orchardists that spray before the bloom begins to drop will find out to their sorrow that it will not do to spray too early, because spraying, when wrongly done, will wash the pollen from the bloom, and such blossoms will not set to mature an apple. They usually fall off when they are about the size of a pea.

As to the killing of bees from the cover crop in this locality about the middle of May, when we spray for the last time, there is hardly any bloom on the ground from which bees could be injured, and one or two rains will usually eliminate the danger of bee-poisoning. It should be the aim of all beekeepers to have such laws passed that orchardists should spray when the cluster first separates and after the bloom begins to fall off; for by that time there are very few

bees that will visit an orchard except in a few instances where a few blossoms will open exceptionally late on a tree, which, however, is not much, and cannot injure bees to any extent.

Bees are absolutely essential in making a fruit crop. We have the only orchard within bee-flight that is sprayed. We have several large orchards which are not sprayed, and we made last year a good half-crop of 1852 barrels, while the other orchards have had an entire failure of Ben Davis apples. Our orchard is entirely Ben Davis, and this is principally due to thoro spraying and my bees.

Strafford, Mo.

T. L. Scharff.

[If you use sulphur in each of your sprays the bees will not be poisoned much, as sulphur is a repellant to insects, including bees. The fact that there was "hardly any bloom" on the cover crop would also protect you.—Ed.]

Swarming with Clipped Queen, Transferring, etc.

Dr. C. C. Miller:—1. If I give a queen two hive-bodies for a brood-nest, shall I get as much comb honey from that colony as with one body, or shall I get more?

2. If I clip queens can I let the colonies swarm naturally, and then, about six o'clock in the evening, take out queen and bees and put them in another hive on foundation? I work all day, and get home at 6 o'clock. My wife is not strong enough to move a hive after the bees have swarmed, so has to wait till I get home. What, in your opinion, would



An early swarm. Photographed by W. W. Gardner, Winsted, Ct.

be the best way to handle them? I am afraid I don't know enough about them to make an artificial swarm as I never handled bees before.

3. I have a hive full of crooked combs that were built in Hoffman frames without starters. They are now full of brood, and I want to take them out and get straight combs with full sheets of foundation. How can I manipulate them so as to let the brood all hatch? What is the best way to get the honey out of them? I have no extractor.

4. When is the earliest time I can start nuclei in this locality? I have one colony now which has capped drone-cells.

5. Which do you advise—one or two frame nuclei?

6. If I start a nucleus with one or two frames of bees and brood about the middle of May, is there any possibility of surplus from that colony if it can be helped with brood from another colony? How much help would it need? There is much more I should like to ask, but will try to understand the A B C and X Y Z, and Fifty Years Among the Bees for the rest. I have gotten lots of valuable information from both of those books.

Bert T. Wiemeller.

Indianapolis, Ind.

Dr. Miller replies:

1. You will gain decidedly if, with a strong colony, you allow the queen two stories up to the time of putting on supers, and then reduce to one story. I never experimented much in letting the two stories continue when supers were given; but from the little I did at it I thought I lost rather than gained.

2. Yes, you can do as you propose; but if you can get your wife to aid and abet you, or even some child, you can do a better way. When the swarm issues, catch the clipped queen and cage her; thrust the cage into the entrance of the hive, or else close beside it where it will be in the shade, then in the evening or next morning you can operate to your satisfaction without having to hunt for the queen.

3. Set over the hive an empty hive-body containing a straight comb of brood that you will get from some other colony. Any time after three days, if you find eggs in the upper story you will know that the queen is up, or at least has been up. If you find the queen on one of the frames, set that frame to one side; lift off the upper story; put a queen-excluder on the hive, return the upper story, and then put back the comb with the queen. If you don't find the queen up you must continue looking for her other days until you do find her. Three weeks after putting the queen over the excluder, all the worker-brood in the old hive will be hatched out, when you can set the upper hive down on the bottom-board and take away the old hive. You may drum the bees out of the old hive; or if you are careful you can cut out the combs, bees and all, and brush the bees off the combs at the entrance

of the new hive. It is just possible that the combs are so thoroly built crosswise that you cannot get out any frame. In that case take a hand-saw and cut away any attachments of comb to the sides of the hive. Turn the hive upside down and lift it off the combs, when you will have the latter at your mercy. Some of the combs of honey may be fit for the table. Melt up the rest; and, when cold, lift off the cake of wax.

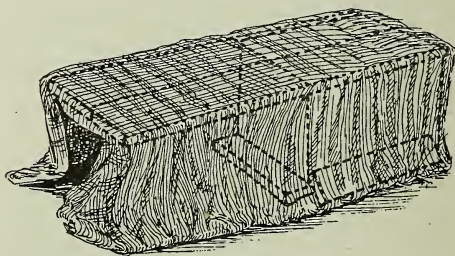
4. You can do so while dandelion is in full play; but unless you have some special reason for doing so at so early a date, better wait till white clover begins.

5. In general the two-frame, and sometimes the three-frame, are better.

6. Yes, not only a possibility, but a good probability, if you give it a frame of brood by May 25, and then two more brood afterward, giving each of them after an interval of ten days.

Fooing the Robbers.

Last season I discovered a sure cure for robbing; at least the plan did not fail me once during the season. I take two boards four or five feet long, and lay on top of the hive lengthwise, the outer edge of the boards even with the outside edge of the hive. These extend about two feet over the front of the hive. Then I take a piece of old carpet or anything that will reach around the boards, hive and all. With a short board



I press the carpet tight against the sides of the hive and put something under the hive if there is any light showing. This forms a dark passageway of about two feet into the entrance of the hive. The robbers won't enter unless they can see light or some way to dodge out. The bees which belong to the hive will pass thru and into the hive.

Kansas City, Mo.

J. H. Morris.

Extract Those Partly Filled Sections.

I know not whether any one else has tried it, but I had my blacksmith make me four clamps in order that I might extract from imperfect sections. I tried to get a clamp suitable for the purpose, but without success, so I had a blacksmith make me four—one for each basket in the extractor. They are just long enough to slip over the ends of section-holders with four sections in; and when the thumbscrew was turned down there was no trouble in the extractor, except I had to put a screw-end down in the extractor.

Of course I uncap after the sections are clamped in the holder.

To extract honey from unfinished sections I had the blacksmith make me four clamps from a $\frac{1}{4}$ -inch iron rod, as per sketch. Sections are placed in the section-holder, a clamp fastened over the top of the holder by means of the thumb-screw. After uncapping where required, the clamped section-



holder was then placed in the extractor with the thumb-screw down to avoid coming in contact with the upper part of the extractor while in operation. I found this little device satisfactory in every way, and take pleasure in passing the idea on to any beekeeper to whom it may be useful.

W. L. Palframan.

Niagara on the Lake, Ont.

The Super-spring Fixes It.

Doolittle says, p. 796, that if the super is the least bit too broad for the mass of sections "we have a space to be filled with propolis, very much at the expense of the appearance of the sections when ready for market." Does he mean if there are curved lines? If all lines are straight, will not the super-springs prevent any open space for propolis anywhere in the breadth except around the springs themselves outside of the last fence? What is a super-spring for?

Steven T. Byington.

Ballard Vale, Mass., Oct. 14.

[Doolittle evidently meant that if the super was too large the sections would be only loosely in contact, with the result that bee-glue would be chinked in between the spaces. Usually it is advisable to have the super large enough to admit wedges and a follower-board or springs—preferably the last named. When the sections are closely squeezed together there will not be much bee-glue deposited between the contact edges, for the simple reason there is no room for it. The very purpose of super-spring wedges or thumb-screws is to minimize accumulations of propolis.—Ed.]

Is *Melilotus indica* a good honey-plant?

Marion, N. C.

W. B. Bailey.

[*Melilotus indica* is a honey-plant, but an annual sweet clover, used largely for a cover crop in orchards. It grows readily, but is not as good a honey-plant as *Melilotus officinalis* or *Melilotus alba*.—Ed.]

Limitations of Express Shipments of Bees.

Having no foul-brood law and no inspector in this state, would I be allowed to sell pound packages of bees? I note Massachusetts will not allow shipments into that state; but how about New York, Pennsylvania, and Ontario?

From what you know, which do you consider the best counties in Indiana for keeping bees? Is there any good location in the southern part of the state? L. H. Robey.

Worthington, W. V., May 10.

[There is no reason why you could not ship bees in pound packages anywhere except in Massachusetts, and even there you can ship them providing you get permission or have them inspected on arrival; but the trouble is, bees in pound packages cannot stand it to be held until they could be inspected, and we do not know how it would be possible to determine whether they had disease in such packages.

We could not advise you as to the best locality in Indiana; but we would advise you to write to Geo. S. Demuth, care of Bureau of Entomology, Washington, D. C. He was formerly inspector of Indiana, and we think he knows the state very thoroly.—Ed.]

Why Queens Hatch without Wings.

I am sending you a sample queen, a virgin, hatched out today, and she has no wings. Half of the queens I have reared this spring have been deformed in this way. I never saw as many crippled young queens in my life, and I don't see what is the cause of it unless it is the cool weather.

Roanoke, Va., May 27. Henry S. Bohon.

[When bees or queens hatch without wings the trouble can usually be traced to too much heat or too much cold at a period when the wings are forming. Sometimes the moth-worm has something to do with it; but in your case we should infer that the bees had withdrawn from the place where the young queen was confined in the cell, and she became chilled during a period of her growth, with the result that her wings failed to develop. An examination of the cage seems to show that she is also defective in her legs. We believe you will probably find quite a difference after warm weather comes on, and especially if you have your cells reared in very strong colonies in double-walled hives. We do not use single-walled hives for the building of our cells. We have two-story powerful colonies in double-walled hives.—Ed.]

A Correction

Allow me to correct some errors which crept into your editorial of May 1 entitled "Our Foreign Exchanges." First, you have made an error of names. It is not Ulrich Gubler who has died, but Ulrich Kramer, as you will see by referring to *Gleanings* for 1915. The former is the retired editor of the *Bulletin d'Apiculture pour la Suisse Romande*, and is very much alive. At least

we have a letter from him dated December 28, and we hope nothing has happened to him since. The latter, Mr. Kramer, was president of the Eastern Switzerland Beekeepers' Association.

The three Italian bee journals are still appearing regularly, and several of the French, tho the latter are less regular. Among them we should name the *Revue Francaise d'Apiculture*, published in Marseilles, and the *Abeille Bourguignonne*, published in Joigny. The Swiss "*Bulletin*" has not missed a number. Several of the German magazines have also continued regularly, tho there is no telling how soon they may have to suspend.

Some Russian bee journals are also coming, and I have on my desk a publication sent out from Tiflis, describing the Caucasian bees and giving a map in three colors, to show the distribution, between the Black Sea and the Caspian Sea, of the Caucasian gray bee and the Persian bee or bee of Lenkaron, with a delineation of the districts in which the two breeds are mixed.

So, in spite of the wholesale massacres caused by the olden-time spirit of conquest, civilization is asserting itself in the countries at war. We trust that, after a while, they may be so sick of fighting that a general disarmament will ensue. Enough wealth has probably been destroyed to feed the entire world for a year or more. Famines may ultimately result.

Of course, the second quotation you make is not from *L'Apiculteur*, published in Paris, but from the *Bulletin*, of Switzerland, and the words are correctly credited to good old friend Gubler. But Mr. Gubler never wrote a line for *L'Apiculteur*.

Hamilton, Ill.

C. P. Dadant.

[Thanks, friend D., for your friendly corrections.—Ed.]

Bees and Bullets

A few days ago a man who lives near one of my outyards phoned me that a large giant cactus which stood in one of his fields had fallen down, and that a swarm of bees in it was making things so hot for him that he was unable to plow near it, much to his discomfort and annoyance. He concluded that, since the cactus was so near my bees, and that mine were the only ones in the country for some distance, they must be one of my escaped flock, and that I ought, therefore, to come up and take them away. Knowing that a friend near an outyard is a priceless jewel to a beekeeper I immediately went up, more to please him than to get the bees, and found them truly fighting mad. Calming them with a few puffs of smoke I found they had taken up entirely within the cactus, and had got there thru a very small hole in one side. Taking my ax I chopped away the fleshy parts, and there they were in a nice, dry, snug home about two feet long and one foot in diameter. I then broke away the skeleton parts and soon hived them.

I then wondered how they could have got in there and what had originally made the hole. Some birds may pierce the thorns and thick flesh that covers the skeleton work within, but they always choose to do it at the more tender top, and therefore there must be some other cause. My investigation, however, soon dispelled all doubts, as, imbedded in the wall just opposite the entrance, was a bullet with its nose in the right direction. This told the story. Some one had, perhaps carelessly, shot into the cactus years before, and, contrary to the general rule of wantonness, had actually made a home for a nice swarm of bees.

Phoenix, Ariz.

L. J. Holzworth.

Putting Fresh Bees where Others have Died.

I received a fine queen last year, but foul brood got in the hive and all died. There have not been any bees in the hive since last December. Would it be safe to put new bees in the hive with the old combs?

Las Vegas, Nev.

Philip Steinman.

[It would hardly be safe to put any fresh bees in a hive where bees had died of foul brood; but are you sure they died of that disease? We are sending you our little book, "Diseases of Bees," and suggest that you look it over very carefully, especially the symptoms of American and European foul brood. If you find scales in the combs of dead larvæ it is probably American foul brood, and it certainly would not be safe to introduce any other bees into the hive; but if they died of dysentery or from exposure to cold weather you could put in a half-pound of bees and make a very nice start.—Ed.]

Don't Get the Wrong Colored Paper.

The article by Frank Coverdale, April 1, page 284, is of great value; but his reference to litmus paper might confuse a great many. There are two colors of litmus paper—blue and pink. The blue is for testing soil or water for acid, and the pink is for testing for alkali.

Poplar Bluff, Mo.

H. W. Peterson.

A Love Limerick.

A foolish young lover named Vawter
Fell in love with a beekeeper's daughter.
When his heart he had flung
At her feet, he was "stung"
And went away breathing out slaughter.

Then came another and sought her
With jewels and gold, and he bought her;
But his love she had not,
And she never forgot
The unhappy lesson it taught her.

For into a passion he wrought her
By drawing the marriage ties tauter;
So she got a divorce,
With a pension, of course,
And left him with jeering and laughter.
Æsop.

A. I. Root

OUR HOMES

Editor

Come with us; let us lay wait for blood; let us lurk privily for the innocent without cause; let us swallow them up alive as the grave; and whole, as they that go down into the pit.—PROV. 1:11, 12.

We have made lies our refuge, and under falsehood have we hid ourselves.—ISAIAH 28:15.

The letter below explains itself:

Mr. Root:—I am sending you an article which I took from the *Fra*. I should like to see it denied in your Home department. WALTER E. WRIGHT.

Ellwood City, Pa., May 29.

I presume our readers are aware, or at least most of them are, that both the whisky party and the temperance people are sending out large-sized sheets about once a week to post the people in regard to this matter of wet and dry, giving statistics as to what is the result in states that have voted dry, etc. As Kansas has been held up before the nation as an example of the beneficent results of prohibition, The National Wholesale Liquor-dealers' Association has "got busy" in hunting up everything that could be said against prohibition in Kansas. Sometimes their statements have a grain of truth to start with; and the statements that they make may be true; but their explanation of the facts given is misleading. Here is an illustration:

"Kansas closed 220 schools in 1913."

The above was given on the sheet our friend inclosed. Now, I have not looked the matter up, but I presume Kansas has been in the forefront in consolidating her country schools, just as we are now doing here in Ohio. But within two miles of where I am now sitting, the old schoolhouse where I learned my A B C's has been moved away, and is now used as a barn. Are we to understand that this means that the juveniles in that neighborhood have fewer and poorer school advantages than they had 70 years ago? Not by any means. An electric railway runs close to the spot where that old schoolhouse stood; and the pupils, not only from that neighborhood but along the electric line, attend the fully equipped and up-to-date schools here in Medina. Think of using that as an argument against prohibition!

Some years ago Elbert Hubbard gave us so many good things in his *Fra* magazine that we subscribed for it. But shortly afterward he said so many things that were so shocking and so irreverent and blasphemous that we could not consent to have it come any longer. My stenographer says the *Fra*, like the *Philistine*, seems to oppose all moral reforms. Well, our brother sends us two pages; and these two pages seem to be

crammed so full of false statements about Kansas, and bitter denunciation of temperance and temperance people, that I could only wonder that anybody of decency could tolerate it in the average home. Here is a sample:

After thirty-five years of trial, prohibition with all the trimmings has given Kansas an enormous rate of divorces granted wives for cruelty and drunkenness; an unusually high and increasing rate of pauperism; school systems ranking only twenty-ninth in efficiency; an extremely high and increasing rate of insanity, and almost the lowest church population in the Union. Kansas closed 220 schools during 1913. The 1915 census shows a population decrease of 18,404 since 1910.

I am surprised to find that there is a magazine in the United States that would give space in its reading-columns to anything so much in line with the sheet that is being sent out by the Liquor Dealers' Association. I have one of the latter in my hand, bearing no date, but headed "Serial 22." The heading of the sheet is as follows:

NINETEEN STATES ARE "DRY" (?), BUT ABOUT 10,000,000 MORE GALLONS WERE USED LAST YEAR THAN EVER BEFORE.*

Uncle Sam is drinking more whisky today than at any time since he was born. The nation drinks more whisky as a result of prohibition. Four dead, one is dying. Six other youths of Plainview, Texas, are seriously ill. Drank hair tonic. Seventeen sons of prominent families swallowed stuff when they could not get liquor in a dry town; a barber was a victim.

It is evident from the above heading that the liquor party are hard up in their efforts to find fault with prohibition. Because some boys drank some hair tonic and were killed, they quote it as the result of not having a legalized saloon where they could quench their thirst.

In regard to the statement that ten million more gallons of whisky was used in one year as a result of prohibition, one is led to smile. If prohibition really results in an increase in the amount of liquor used, why in the world does not this liquor dealers' association turn in and help us, tooth and nail? I have not the figures at hand, but I am quite sure the consumption of liquors of all kinds is on the decrease. Brewers are making assignments, and quitting the business. Great stocks of liquor are accumulating, and nobody seems to know what is going to be done with them unless we use them for running automobiles.

* In regard to the above ten million gallons, I think I have seen it stated somewhere that more whisky is being used as a result of cutting off the beer and the ruin of the breweries. The whisky, on account of its smaller bulk, can be easily kept out of sight; but notwithstanding the above explanation I am quite sure we have honest statistics to the contrary in regard to whisky.

In regard to Kansas, I clip from the *American Issue* for May 27 the following:

PROSPERITY STATISTICS.

	Missouri	Kansas
Age of states (years)	95	55
Population	3,300,000	1,690,000
Saloons	4,000	
Per capita expenditure for liquor \$ 24.00	\$	1.48
Criminals to 3000 population	10	1
Bank deposits per capita \$ 20.00	\$	140.00
Assessed property valuation		
per capita	\$300.00	\$1700.00
Automobiles to every 100		
farmers	1	20

In Kansas there are 131 towns of 1000 population which own electric-light plants, water and sewer systems, splendid sidewalks and public schools, without a single cent of revenue from the liquor traffic. In Missouri there are scores of towns of from 1000 to 4000 population with open saloons paying a high license, where they have no electric-light plants, no water or sewerage, and poor sidewalks.

In the panic of 1907, Missouri, with all her big banks, was unable to send one penny to the East. Kansas banks sent \$50,000,000.

Kansas spends \$38,000,000 less per year for intoxicants than does Missouri. This explains the prosperity of Kansas.

Please notice in Missouri there is only one farmer out of a hundred who has an automobile, while in Kansas one farmer out of five has one; and I think that, if you will look into their homes and over their farms, you will find everything in proportion.

Now, our good brother who writes the letter at the opening of this article wants to know *who* tells the truth. And this brings up something that I have long wanted to talk about. Who are most likely to tell the truth*—the liquor party who have no other motive in this fight than to increase their sales, and make *more money*? Does not the text I have chosen from Isaiah fit them pretty closely if not exactly?

We have made lies our refuge, and under falsehood have we hid ourselves.

They make a feeble pretense of wanting to benefit humanity. As the temperance papers have had much to say in regard to the suffering wives of intemperate men, the liquor party gives a letter that purports to come from a suffering wife. She does not exactly say that prohibition brought about all her troubles and destitution, but they try to make it appear that way. Here is the wife's(?) letter:

* Let us pause right here, friends, and take a square look at the matter. Shall we believe these weekly sheets sent out by the liquor party—a party that made and kept Ohio wet simply because the slum voters of the great city of Cincinnati overwhelmed us? Shall we let them rule the whole state of Ohio in opposition to the schools and churches, and the Christian people? Shall this slum element, perhaps half drunk when they vote, be believed, and their words be accepted as truth in opposition to the devout Christians who make it their daily prayer as given in that beautiful Psalm, "Search me, O God, and know my heart; try me, and know my thoughts, and see if there be any wicked way in me, and lead me in the way everlasting?"

A WIFE'S PLEA.

The entire state of Tennessee is "dry"—that is, unadulterated liquor cannot be sold openly. But bad whisky and other injurious substitutes may be obtained in "blind tigers."

The following is a letter from a heartbroken wife to the *Memphis Press*:

Editor the Press:—Why don't the administration close the dives in the city? Why don't they stop the sales of whisky? You can get it in restaurants, all you want. Gambling is going on in every corner, and the police know it. The chief knows it.

My home is wrecked, and my life is ruined. My husband has drunk until he has lost his mind and left his home and wife without one bite to eat, or one cent to buy anything with—running after those gambling-hells and rotten whisky.

Will the good people of this town stand for it? My husband was one of the best men in the world until this blind-tiger business started.

For God's sake, close these gambling-hells and blind tigers.

From a wife who has suffered and is today without a dollar.

Here is a clipping, also from the *American Issue* that bears on the subject:

MAKING IT HOT FOR THE CRIMINAL LIQUOR INTERESTS.

Last week special deputies acting under direction of the Attorney General, raided places in Girard, Ala., where liquor had been stored by bootleggers with a view to distributing it thruout Alabama and neighboring states. Girard is just across the river from Columbus, Ga., and offered natural advantages for the importation of contraband whisky.

The first day's raid netted the officers' liquor seizures to the value of \$265,000; the second day \$109,000, and the third day \$100,000.

The Governor of the state sent a company of militia from Opelika to guard the liquor which the officers put in storehouses for safe keeping. An attempt was made by the liquor interests to enjoin the state from removing the liquor, but Chancellor Lewis refused the injunction.

Just think of it, friends—toward half a million dollars' worth of liquors confiscated! No wonder it requires the militia to protect it; and the question comes up as to what is going to be done with all this confiscated liquor. Won't we be obliged to get it in shape so we can use it in our automobiles in place of gasoline, which is now going up so fast?

Now, in closing let me illustrate the point I am trying to make by an incident that happened years ago.

A beekeepers' convention was held somewhere in the West in conjunction with a state fair. Our good friend E. Whitecomb, of Nebraska, was one of the managers of the state fair. Back in those old days they had booths for selling beer, running in full blast at the state fair. Kegs of beer were exposed right out in daylight with great blocks of melting ice resting on them so as to give the multitude a "cool drink." As Mr. Whitecomb was one of the managers I went to him and remonstrated. He replied something as follows, so far as I can remember:

"Mr. Root, we try to be fair, and take a

medium course on all these questions where there are so many differences of opinion. It is true we have given the saloon-keepers the privilege of having a stand to sell beer; and to be fair about it we gave also the W. C. T. U. and the Anti-saloon League the privilege of selling or giving away their literature. We think it best to let the people see *both* sides. Now, in view of the fact that we get quite a lot of money from the beer-stand, and not a cent from you temperance people, we think *you* surely ought not to complain."

Several temperance and Christian people were with me when I made my plea; and as our good friend Whitecomb was very busy, the matter was dropped right there; and ever since that time I have wondered that so many good people should get the idea into their heads, or let it get into their heads, that the liquor party is on *one* side of a debated question, and that the Anti-saloon League is on the *other* side, taking it for granted, without giving it a thought, that both sides were after the money that was in it. I think the world is getting past this notion, however; and before I forget it I wish to mention that, shortly after that state fair, friend Whitecomb was soundly converted, and he came out in print right on the pages of *GLEANINGS*, announcing his stand for the Lord Jesus Christ and for temperance, and for everything else that benefits humanity. I notice that he is still holding to the faith, and writing articles in the *Independent Farmer* for the benefit of humanity. The wets are after the dollars and dimes and nickels. They seldom have the cheek to *claim* that they are after anything else. The temperance people are giving their money, year in and year out, with but little hope of getting any of it back here on earth; and notwithstanding the discouragements and misrepresentations, and notwithstanding the falsehoods (that it seems impossible to refute as fast as they are uttered by the enemy), we are still holding our faith and courage.

Perhaps I might mention the fact that the A. I. Root Co. has, in times past, given something like \$25,000 to the Anti-saloon League with but little expectation that we should ever get it back—at least in *dollars and cents*. But we still have faith enough to keep on, because we believe the promise that "bread cast on the waters" shall (perhaps long years afterward) bring its reward; and while it may be true, as I said above, that we shall never get a return of treasure here on earth, we shall get something a thousand times better—"treasure laid up in heaven."

"WAR ON CHRISTIAN PRINCIPLES."

Whosoever shall smite thee on the right cheek, turn to him the other also.—MATT. 5:39.

Just after my article in the June 1st issue, entitled "Getting Even," and "War on Christian Principles," I saw an account in a daily paper of two prominent men, both of whom, I believe, occupy high offices, and are well known to the world. It seems that, by some mistake, each one of the two had engaged a certain section in a Pullman car. Of course it was a mistake, as such mistakes will sometimes happen. Instead of showing a gentlemanly and Christianlike spirit, each one demanded what he paid for, and each had a receipt for the same. After a wordy fight, one slapped the other on the face, and was afterward sued for \$25,000. After an expensive lawsuit the plaintiff got a verdict of 25 *hundred* dollars. Now comes the question, "Is it possible that neither of these two prominent persons has ever heard of turning the other cheek also? Or is it true that the war spirit has so permeated the whole wide world that two prominent men—men occupying high places in the state of Ohio, and perhaps in the nation, seemed to be entirely ignorant of the fact that citizenship, to say nothing of Christianity, demands that we behave ourselves in a gentlemanly and Christianlike way, especially in the presence of the traveling public."

Years ago, when traveling thru the Black Hills of South Dakota, something similar happened. Two men had the documents to show that they had paid for a certain section in a crowded Pullman car. The porter could not help them, and so they sent for the conductor. The conductor was new at the business, but did everything in his power to quiet the tumult. He offered each one of the belligerents another berth near by; but both declared in substance that he had paid for that particular section, and *was going to have it*, no matter *what* it cost. They were evidently men of means and of education; but the two kept up their jangling until toward midnight. As my berth was close by I could not get to sleep. I myself tried my hand as peacemaker, but it seemed to make them worse. I do not know how it *finally* ended. I became pretty well acquainted with the Pullman conductor, and I really pitied him with my whole heart. Now, here is the saddest part of it: By mere chance I ran across this same conductor several weeks afterward. I told him I hoped he had not had any similar experience since the incident I mentioned. His reply was, "Why, Mr. Root, I have had the same thing over and over again, and even *worse* 'rackets' than the one you saw."

The above would indicate that the Pull-

man-car management ought to have some better system in order to avoid such mishaps; and still more important—yes, vastly more important—we ought to have the apostles of the Lord Jesus Christ scattered like the salt in the parable all thru business and thru the great traveling thorofares, to urge all mankind, little and great, to be ready to turn the other cheek also before getting into quarrels over the merest trifles like the one I have described. What an easy thing it would be in such cases to show forth a Christian spirit to all about us and say, "My good friend, stay where you are. Do

not be worried a bit. No doubt the management will give me another section or berth just as good!"

Now, friends, to come right down to the practical point, how many of you whose eyes rest on these pages will hold yourselves in readiness to show forth a Christlike spirit just as soon as an opportunity occurs, especially when it occurs where there are crowds of lookers-on ready to take sides? Are we who profess to be followers of the lowly Nazarine ready to show forth to the world the grander beauties of "war on Christian principles"?

HIGH-PRESSURE GARDENING

OUR GARDENING AND FARM PERIODICALS.

I have already expressed the thought that it cheers my heart to run over hastily the beautiful farm periodicals from the different states—not only for their intelligent teachings in the line of agriculture, but their high moral tone. I have yet to find a genuine farm paper on the wet side. Of course there occasionally comes out a "make-believe," put out by the wets.

Now just a word about tilling the soil. Here is something from the *Kansas Farmer* for May 27, on the outside cover; and it is such good sound sense I think it will pay you to read it over and over.

Tillage is plowing, harrowing, dragging, disking—anything done to stir the soil, either before or after the planting of the crop.

The principles of good tillage are practically the same for all conditions:

1. Stirring the soil breaks it up. The smaller the particles of soil the greater the area the root hairs or "mouths" of the plant have to "graze" on. Good tillage gives the crop more soil surface on which to feed without increasing your taxes.

2. When fresh vegetable matter is present, stirring the soil tends to make more plant food available. The organic matter is brought into closer touch with the mineral particles of the soil, and plant food is set free by chemical action as the vegetable matter rots down.

3. Air is as necessary for the roots of plants as for the leaves. Plants die if there is no air in the soil. Tillage aerates the soil, supplying oxygen, which is used directly by the soil organisms, and nitrogen, which is used by legumes by means of the nitrogen-gathering bacteria which live on their roots.

4. Tillage tends to regulate the water supply in the soil. Well-tilled soil absorbs rain more rapidly than does a hard soil, and permits a freer circulation of moisture brought up from below by capillary action, such as occurs in a lamp-wick. Like a sponge, it takes water more quickly and stays moist longer than does soil that is packed hard.

5. Tillage kills weeds.

Briefly summed up, then, we till to make a home for the growing plant, to set free plant food, to aerate the soil, to get and use moisture, and to kill weeds.—CARL VROOMAN.

And here is a new periodical from away off in San Francisco. On the beautiful bright illuminated cover we read: "Little Lands in America." Our older readers will remember, perhaps, that years ago I had a series of articles headed "How to support a family on one-fourth of an acre." Of course the quarter-acre was to be mostly covered with glass. The same thing is now incorporated in a chapter or two in our tomato-book. Well, just below the heading of this little magazine we read: "A national magazine edited by William E. Smythe. Devoted to the most valuable of all arts as revealed in the prophetic vision of Abraham Lincoln—the art of deriving a comfortable subsistence from the smallest area of soil."

The above is a revelation to me. If Abraham Lincoln did give us that beautiful thought about getting a living on a little plot of ground, say out in the back yard, I shall have still more reverence and respect for his memory than ever before.

Just below the above there is a picture of a honeybee, and under it the legend "The honeybee earns \$400 a year in your back yard." The first article in the journal for April is headed "What do you know about bees?" It is quite well illustrated. The price of the magazine is \$1.00. The address is 504 Sharon Building, San Francisco.

By the way, "A little land and a comfortable living" is now receiving additional emphasis from the boys' and girls' clubs. The girls especially, of the whole United States (or at least nearly so), are now striving to see who can make the most money on one-fourth or even one-sixth of an acre. I need not copy the reports here, because our various periodicals are full of them. Not only have wonderful results

been achieved by girls in their teens, but several girls under fifteen have done wonders. I think I saw in one of our periodicals a picture of a girl only thirteen years old who had made something like forty dollars in growing and canning tomatoes on only a sixth of an acre.* Now, you need not say these stories were all "made up," for you can see it done in almost every progressive neighborhood; and if you live in a city, by taking a little pains you may see what is being done in a similar line in the boys' and girls' gardens on vacant spots of ground. The owner of the ground usually not only lets it to poor people free of charge, but plows and cultivates it so it will be in good shape for gardening, and sometimes furnishes manure and fertilizers. If a man has a piece of real estate in a growing city, it is nothing strange if it should transpire that he gets a better price for it when it is covered with vegetables and flowers than if it is left to grow up to unsightly weeds. May God bless the boys and girls who are in love with modern agriculture; and may the modern agriculture ultimately lead them to get in love with the great Father above who gave us this beautiful world with its wonderful possibilities along the line of agriculture.

I have given you pictures during the winter of my Florida garden; and some of you may wonder what I am doing here in Medina on this last day of May. Well, I have not done very much as yet, because the ground has been too wet to work; and in our Medina clay soil that means quite a little more than it does down in Florida, where one can always get to work two or three hours after the heaviest kind of rain-storm. I have peas up that are doing very well; but my sweet corn, planted at the same time, has, a great part of it, rotted in consequence of the cold and wet. The Golden Bantam, as heretofore, stands bad weather very much better than the other varieties.

A year ago I spoke to you about a hand cultivator to be run by a motor. There are several such machines now on the market; but they cost about \$150, and weigh pretty well toward 500 pounds. I have got hold of something that, for an old man like myself, I think is better than a motor cultivator. In fact, it is very much simpler. It is a little hand cultivator that I just bought of Sears, Roebuck & Co. It weighs only 20

pounds, and it cost only \$1.95. It not only pleases me because of its lightness, but the tools that go with it are such hard-polished steel that the result is, the tool is almost as smooth as glass. It slides into the dirt, even if it is damp, and the dirt slides off from it. This is a wonderful improvement. I might have thought of it long ago, for the reason that my favorite implement in gardening is a large-sized enameled spoon. This spoon is always clean because it is so easy to rub off the soil when you are thru cultivating or when you are done using it. I prefer my big spoon to any kind of trowel. In stirring the soil around a plant, or in lifting little plants from the seed-bed to be put out in the garden, the spoon is about the handiest tool I ever got hold of. If I lay it down and forget where I left it, I am like a fish out of water, as the expression goes.

A word more about the cultivator. I have been using hand cultivators that cost four or five dollars. But this little light cheap cultivator I have mentioned is for me away ahead of any of them. Of course it has no arrangement for sowing seeds, etc., and I do not believe I like a combined tool. I like to have every tool made for a particular purpose with as few loose attachments as possible to get lost and require time in changing and adjusting.

Perhaps you wonder why I do not say a word about the maple sugar I mentioned last year, as a "substitute" for an electric or gasoline motor. Well, the maple sugar does not always answer just right. Perhaps when one is taking strong muscular exercise day by day he can stand a fair amount of sugar; but where one has to spend a good portion of his time sitting in the office, as I am now while dictating this, he had better be careful about *too much* sweet; and *no* sweet (nor anything else, for that matter) between meals.

THE STRIPED SQUASH AND MELON BUG.

Mr. Root:—I was quite interested last year in the discussions and remedies to prevent the devastation of the striped vine-bug. This may not be just the proper name for it, but I think you will understand the fellow I mean. At that time, I thought of writing you; but fearing it would be too late to be of benefit for that year, I decided to wait till the early spring, and I feel sure the remedy that I here offer is a success under any and all conditions. It is not my own invention, neither have I any interest in either of the ingredients used, which consist of air-slacked lime and either coal oil or turpentine, the lime to be moistened with the liquid till it is highly scented, and then sprinkled or sifted on the hills. When scattered over the vines where bugs are thick on them it seems that each individual bug tries to be the first to clear the premises to get away from it. I have used both the oil and turpentine, and see little difference in results. This is what the R. M. Kellogg people use for their melons, I have been told, and that is the way I found its virtues.

* I find the following in *Farming Business* for June 5:

Olga Chick, of Ferguson, Ky., was awarded the first prize in the Canning Clubs of the state. In the summer of 1915 she raised 5944 pounds of tomatoes on one-tenth of an acre, and canned 1075 cans of tomatoes alone. Her work netted her \$121.

I told you last winter when visiting you at Brantown about their melon crops; and from my window as I write, just across, are their cold-frames filled with pint berry-boxes set solid, and two to three melon-plants now up in each box, some starting the second leaves. I was over at noon to investigate for this report, and took measurements of their beds. I find there is 18,024 square feet under glass, and all solidly filled with the small boxes with plants and seeds, as a few of the latter are not up yet. These boxes are to be transferred to hill spaces in the field at the proper time. Their fields are marked off one way eight feet, and the cross four feet; then in placing the plant boxes each alternate four-foot mark is missed in opposite rows, so that in cultivating it makes rows one way four feet apart and eight the other. This plant is only a part of their fields for this year. Bugs do not respect their plants above their neighbors, so they would not use a remedy that is not a sure thing. The lime is a benefit to the plant life in the land. They now have 120 acres under overhead irrigation, and working this dry weather. As you spoke of so doing, you had better come over and see them this summer.

Three Rivers, Mich., May 11. M. L. BREWER.

My good friend Brewer, I have used kerosene on sawdust, and at first I thought it was going to do the business; but after a while the bugs became so greedy, at least here in Medina, that they did not pay much attention to it. Then I tried strong tobacco dust, and that did very well until we had a rain. I finally saved my plants, but it was only by eternal vigilance. I have in mind this Kellogg institution; but here in Medina, at this date, June 3, we have been having such abundant rains that I cannot even get out to try my new Ford automobile.

PRICKLY PEAR IN AUSTRALIA.

Mr. Root:—For about a year I have been a subscriber of GLEANINGS. I always read it carefully from one end to the other, and never get tired of it. You must not think I am a great beekeeper, for I am only starting; but, beekeeper or not, and even if it cost me my last penny, I must have GLEANINGS. But now for the reason of this letter:

Yesterday I received GLEANINGS for June 15, and on page 515 I read something about the food value of the prickly pear. You must know that I am a Dutchman, and left my own country five years ago. When I came here I had some money and took up some land—the piece where I live now. That land was infested with prickly pear; but I thought it was possible to clean that rubbish off. You should know that I have to clean the pear or I lose my land. But after five years I have cleaned only about 30 acres out of 130. We lived as carefully as possible; but, all the same, I lost every penny I had on that stuff; and so it is, not only with me but with all my neighbors; and not only my surrounding people are suffering, but hundreds and hundreds of selectors who took up prickly-pear land. Some acres cost up to \$75 to \$100 for the first cleaning. The next year that same acre will be like a wheatfield, so thick is the young pear coming up again from seed. In a word, the prickly pear is the pest of Queensland.

I would not have stopped here at all had not an American, Mr. Roberts, come here to Queensland with a new invention to clean pear with a gas. I managed to buy an outfit for gas, and that is doing good work. The densest pear can be treated now for \$3.60 an acre, so that is a blessing.

This letter is to give a warning to people about prickly pear. It is believed here generally that the pear is practically good for nothing. It grows anywhere and everywhere on good and bad soil, in the sun and in the shade, with rain and without rain, even on rocks and on some stumps and trees. Birds, cows, wallabys, kangaroos—in fact, all animals that eat the fruit, spread the seed, and so, notwithstanding the fact that thousands of acres are cleaned every year the pear in Queensland is increasing at the rate of one million acres a year.

There is an agricultural bank here from the government for helping the new settler on the land with some money to carry him over the first few difficult years. But that bank decided a few months ago not to lend a penny to prickly-pear selectors, so frightened is even the government at this pest. They have lost too heavily on prickly-pear selections; therefore my question, "Must we not give warning to other countries, or are we all mistaken, and is pear a valuable plant? Then, again, is it paying to make prickly pear into fodder? Of course this has much to do with prices of land and wages. Land runs here from about \$10 to \$50 an acre, and wages are about \$2.00 a day.

Perhaps you will be so kind as to give this a thought; and if you think it is a pest, please tell your own folks through your paper; and if you think it can be made into paying fodder, please be so kind as to write me.

I hope you will excuse me for my broken English; but you must remember it is not my own language.

W. MERTENS.

Gayndah, Queensland, Australia.

Many thanks, my good friend, for your kind letter. No doubt the variety of prickly pear you have is a nuisance; but my impression is that the spineless cactus we have here, and which is selling as high as several dollars a leaf, is quite a different thing from your prickly pear. I have gone over all of your letter most carefully, but do not find a word in regard to the spineless variety. The spineless now growing in my garden is perhaps a foot wide and a couple of feet long—no spines whatever; in fact, you might give them to the baby to play with, and it has been abundantly demonstrated that cows, horses, sheep, pigs, and even poultry, eat them with avidity. It must be your variety is different from the new kinds we have here, or that your soil is in some way peculiar.

After you eradicate this wild prickly pear, could you not grow the spineless kind? Has anything of that sort been tried so far as you know? I should be glad to hear from you further.

SPINELESS CACTUS IN OREGON.

In regard to the spineless cactus, I got some years ago. I paid a big price for them. I took the best of care of them, and expected wonders; but in return they only dragged along for a year or two, and finally died. I think it is too wet and cold here.

You know Burbank sold out to a company, and they tried to get me to take shares; but I wanted to see what the thing was worth before investing money in it. While they may do all right in a warm dry climate I am satisfied they are not a success in this part of the country.

Laurel, Ore., Dec. 2.

MRS. SARAH PARR.

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. . . Over 20 Years a Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested....	1.00	5.00	9.00	.75	4.00	7.00
Tested	1.50	8.00	15.00	1.00	5.00	9.00
Select tested	2.00	10.00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies ..	6.00	30.00		5.00	25.00	
10-frame colonies ..	7.50	38.00		6.50	32.00	
1-2 lb. pkg. bees....	1.50	7.00		1.00	5.00	
1-lb. pkg. bees....	2.00	10.00		1.50	8.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders, \$5.00 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out till first of June. Also nuclei and colonies, if wanted before June 1, add 25 per cent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

H. G. Quirin—the Queen-breeder
Bellevue, Ohio

Q-U-E-E-N-S!

THREE-BAND ITALIANS, BRED FOR
HONEY AND GENTLENESS, FROM
IMPORTED STOCK

	1	6	12
Untested	\$0.75	\$4.25	\$8.00
Select untested	1.00	4.75	9.00
Tested	1.50	8.75	17.00

Breeders, \$3.00 to \$5.00.

Bees in 1-lb. packages, \$1.25, without queen; if queen is wanted, add price.

Every queen PURELY mated; safe delivery and perfect satisfaction guaranteed.

N. Forehand, Fort Deposit, Ala.

Queens of MOORE'S STRAIN of Italians

PRODUCE WORKERS

That fill the super quick

With honey nice and thick.

They have won a world-wide reputation for

honey-gathering, hardness, gentleness, etc.

Untested queens, \$1.00; six, \$5.00; 12, \$9.00.

Select untested, \$1.25; six, \$6.00; 12, \$11.00.

Safe arrival and satisfaction guaranteed.

Circular free.

J. P. MOORE,
Route 1, MORGAN, KY.

Queen-breeder

55c -- Golden and 3-banded Italian Queens -- 55c

We guarantee them to be as good as money can buy. Our breeders are of the very best, our methods are the best known. If they are not satisfactory you can get your money back for the asking. Where can you get any more for big money? Virgins, 25 cts.; untested (1), 55 cts.; 12 or more, 50 cts. each. 1 lb. bees, \$1.25; 2 lbs., \$2.00; 1-fr. nucleus, \$1.25; 2-fr., \$2.25. Full colony 8-fr., \$6.00; 10-fr. \$7.00. No queens at these prices.

We also have breeders direct from Dr. Miller and can furnish queens of his strain, which is the best in the world. Start right, get some of the best in the world for the foundation of your strain.

To inquirers:—I am rearing no queens for sale, but am keeping The Stover Apiaries supplied with breeders from my best stock; and from thence you can obtain the same queens you could get directly from me.

C. C. Miller, Marengo, Ill., March 1, '16.

Prices of Dr. Miller's strain: Virgins, 50 cts. each; 12 for \$5.00; Untested, \$1.00; 12 for \$10.00; Tested, \$2.00; Select Tested, \$3.50; Breeders, \$5.00 to \$10.00.

Capacity over 2000 per month. Safe arrival and satisfaction guaranteed.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

WARDELL STRAIN OF ITALIANS

Descendents from the Famous Root \$200 Queen

I was head queen breeder for The A. I. Root Co. for a number of years, and during that time I originated the famous \$200 ROOT BREEDER whose stock has gone the world around. These bees for GENTLENESS, GENERAL VIGOR, and HONEY-GATHERING qualities have ESTABLISHED A REPUTATION. I have been for years developing and perfecting this same strain. While my prices may be higher than some others, my queens are cheap in comparison with their value.

Untested				during June, \$1.50; in July, August, and September, \$1.00
Select Untested				1.75 " " " 1.25
Tested				2.50 " " " 2.00
Select Tested				3.50 " " " 3.00

Delivery will begin about June 1.
Address all orders to

F. J. Wardell, Uhrichsville, Ohio



ITALIAN QUEENS

Three-banded

From June 1 to November 1

Only 75 cts. each; 6, \$4.00; 12, \$7.50; tested, \$1.00; 6, \$5.00; 12, \$9.00; of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey-gatherers. Send for my free circular and price list.

JOHN G. MILLER, CORPUS CHRISTI, TEXAS
723 South Carrizo Street

Italian Queens

with a Record of 30 Years

Leininger's strain of Italian bees and queens have been carefully bred for 30 years; for gentleness and honey-gathering qualities are unexcelled; 95 per cent pure mating guaranteed. Queens ready June 1. Untested, each, \$1.00; 6, \$5.00; tested, \$1.50; 6, \$8.00.

Fred S. Leininger & Son, Delphos, Ohio

Italian Queens --- Three-banded

We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows: Untested queens, \$1.00 each; \$10.00 per dozen. Tested, \$1.25 each; \$12.00 per dozen. Select tested, \$2.00 each; \$20.00 per dozen. Breeding queens, \$5.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

J. W. Taylor & Son, Beeville, Bee Co., Texas

Prices on nuclei on request.

THREE - BAND ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purpose; very gentle, not inclined to swarm. If you buy once you will buy always. GUARANTEE that all queens will reach you in good condition, to be purely mated, and to give perfect satisfaction. All orders filled at once.
Untested, . . . April 1 to July 1, 1, \$0.65; 6, \$3.75; 12, \$7.25
Select Untested, " " 1, .90; 6, 5.00; 12, 9.00
Tested, . . . " " 1, 1.25; 6, 7.00; 12, 13.00
Select tested, . . . " 1, 2.00; 6, 11.00; 12, 20.00

L. L. Forehand, Fort Deposit, Alabama

Italian Queens

Untested during June \$1.00 each, 6 for \$5.00, 12 for \$9.00. After July 1, 75 cts. each in any quantity. Satisfaction in all cases or money refunded.

L. H. Robey, Worthington, W. Va.

ITALIAN QUEENS, NORTHERN BRED

are surely most hardy for Canada and northern States. Try one. Untested, \$1.00; select tested, \$1.50. List free. Plans "How to Introduce Queens, and Increase," 25 cts.

E. E. MOTT, Glenwood, Mich.

BEE SUPPLIES

Send your name for new 1916 catalog.

Dept. T, CLEMONS BEE SUPPLY CO.,
128 Grand Avenue, Kansas City, Mo.

EUROPEAN FOUL BROOD

is spreading in various parts of the country. The first step in its cure is a vigorous strain of ITALIANS.


The Root Strain of Bees have shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foul Brood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foul Brood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is \$1.50 in June and \$1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for \$1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

The A. I. Root Company . . . Medina, Ohio



THE COAST LINE TO MACKINAC DETROIT

CLEVELAND, BUFFALO, NIAGARA FALLS TOLEDO, PT. HURON, ALPENA, ST. IGNACE.

A REAL VACATION

The Water Way is the Only Way

The Great Lakes is the mecca for particular and experienced travelers on business and pleasure trips. The D. & C. Line Steamers embody all the qualities of speed, safety and comfort. The freedom of the decks, the cool, refreshing lake breezes, the commodious state rooms and unexcelled cuisine, make life aboard these floating palaces a source of enjoyment.

"D. & C. A SERVICE GUARANTEE"



During Summer Season the Two Glants of the Great Lakes, Strs. City of Detroit III and City of Cleveland III, operate daily service between Detroit and Buffalo; daily service between Detroit and Cleveland; also delightful day trips during July and August, as well as two boats out of Detroit and Cleveland every Saturday and Sunday nights during these two months. **FOUR TRIPS WEEKLY FROM TOLEDO AND DETROIT TO MACKINAC ISLAND AND WAY PORTS**—From June 25th to September 10th, **SPECIAL STEAMER CLEVELAND TO MACKINAC ISLAND. TWO TRIPS WEEKLY. NO STOPS ENROUTE EXCEPT AT DETROIT EVERY TRIP.** Daily service between Toledo and Put-in-Bay, June 10th to September 10th.

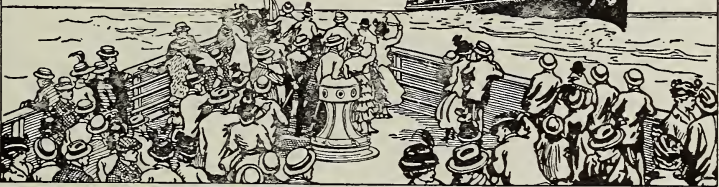
YOUR RAILROAD TICKETS ARE ACCEPTED

On D. & C. Line steamers for transportation between Detroit and Cleveland, Detroit and Buffalo, either direction.
Send two cent stamp for illustrated pamphlet and Great Lakes Map. Address
L. G. Lewis, G. P. A., Detroit, Mich.

DETROIT & CLEVELAND NAVIGATION COMPANY

PHILIP H. McMILLAN, Pres. A. A. SCHANTZ, Vice-Pres. & Genl. Mgr.
All D. & C. Steamers arrive and depart Third Avenue Wharf. Central Standard Time.



DAISY FLY KILLER



HAROLD SOMERS, 150 DeKalb Ave., Brooklyn, N. Y.

placed anywhere, attracts and kills all flies. Neat, clean, ornamental, convenient, cheap. Lasts all season. Made of metal, can't spill or tip over; will not soil or injure anything. Guaranteed effective. Sold by dealers, or 6 sent by express prepaid for \$1.

60-lb. Honey-Cans

Good second-hand, fit to refill with honey for use again. . . .

For shipment from New York, Philadelphia, or Medina, while stock lasts, 10 cases, two 60-lb. cans, \$4.00; 25 cases, \$8.50; 100 cases, \$30, delivered on cars or boat. These cans have been used once for honey and emptied, leaving a film of honey adhering to the inside, protecting the tin from rust. Well worth the price to anyone in need of cans. Send orders to

The A. I. Root Company

New York Philadelphia Medina, Ohio

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.



SQUAB BOOK FREE

Make money breeding PR squabs. 1916 demand biggest ever. Squab book free, telling money-making experiences. How to sell by parcel post. Start small, grow big. Many women customers. Write today. **PLYMOUTH ROCK SQUAB CO., 315 HOWARD ST., MELROSE HIGHLANDS, MASSACHUSETTS.**

1916 Book List in Clubbing Offers with Gleanings in Bee Culture

SUBSCRIPTION RATES: \$1.00 per year. When paid in advance: 2 years, \$1.50; 3 years, \$2.00; 5 years, \$3.00.

GLEANINGS IN BEE CULTURE, one year and copy of latest edition of THE A B C and X Y Z OF BEE CULTURE	}	\$2.50
GLEANINGS IN BEE CULTURE, one year and copy of BEEKEEPING by Dr. E. F. Phillips	}	\$2.50
GLEANINGS IN BEE CULTURE, one year and copy of PRODUCTIVE BEEKEEPING by Frank C. Pellett	}	\$2.10
GLEANINGS IN BEE CULTURE, one year and any ONE of the books designated as A, B, C, D, E, or F	}	\$1.00
GLEANINGS IN BEE CULTURE, one year and any ONE of the books marked K, L, or M	}	\$1.50
GLEANINGS IN BEE CULTURE, one year and ONE of the books marked A, B, C, or D, and ONE of the books marked K, L, or M	}	\$1.75

LIST OF BOOKS

- (A) MANAGEMENT OF OUT-APIARIES
- (B) ALEXANDER'S WRITINGS ON PRACTICAL BEE CULTURE
- (C) THE TOWNSEND BEE BOOK
- (D) THE NATURAL HISTORY OF THE HONEYBEE
- (E) ANSWERS TO 150 QUESTIONS
- (F) THE USE OF HONEY IN COOKING
- (K) FIFTY YEARS AMONG THE BEES
- (L) REPRINT OF ORIGINAL EDITION OF LANGSTROTH
- (M) HOW TO KEEP BEES

Canadian postage on each of the offers above, 30 cts. extra; foreign postage, 60 cts. extra.

Gleanings in Bee Culture

The A. I. Root Co., Publishers

Medina, Ohio

Classified Advertisements

Notices will be inserted in these classified columns for 25 cts. per line. Advertisements intended for this department cannot be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

FOR SALE.—Amber honey, 7 cts. per lb. Sample, 10 cts. C. R. ALLEN, Vicksburg, Miss.

FOR SALE.—Buckwheat honey at 7 cts. in new 60-lb. cans. C. J. BALDRIDGE, Homestead Farm, Kendalia, N. Y.

FOR SALE.—A1 sweet-clover honey in 60-lb. cans, two cans to a case, 7 cts. per lb.; also comb honey in 4¼ x 1½-inch sections, f. o. b. cars. JOE C. WEAYER, Cochrane, Ala.

RASPBERRY HONEY.—Thick, rich, and delicious, put up for sale in 60-lb. tin cans. Price \$6.00 a can. Sample by mail for 10 cts., which may be applied on any order sent for honey. Write for price on large lots. ELMER HUTCHINSON, Rt. 2, Lake City, Mich.

HONEY AND WAX WANTED

Beeswax bought and sold. STROHMAYER & ARPE Co., 139 Franklin St., New York City.

WANTED.—Comb and extracted honey, in car lots and less car lots. J. E. HARRIS, Morristown, Tenn.

WANTED.—To buy a quantity of dark or amber baking honey. State price, and source gathered from. A. G. WOODMAN, Grand Rapids, Mich.

WANTED.—Your own beeswax worked into "Weed Process" foundation at reasonable prices. SUPERIOR HONEY Co., Ogden, Utah. "Everything in bee supplies."

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels, and emery-wheel stands. CHARLES A. HENRY, Eden, N. Y.

HONEY LABELS.—Most attractive designs. Catalog free. EASTERN LABEL CO., Clintonville, Ct.

SEND TODAY for samples of latest Honey Labels. LIBERTY PUB. Co., Sta. D, box 4-E, Cleveland, Ohio.

Good second-hand 60-lb. cans, 25 cts. per case of two cans, f. o. b. Cincinnati. Terms cash. C. H. W. WEBER & Co., Cincinnati, O.

FOR SALE.—Cedar or pine dovetailed hives, also full line of supplies, including Dadant's foundation. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. Co., Greenville, Tex.

Full-drawn combs on wired sheets of foundation, 20 cts.; 10-frame dovetailed hive-body, painted, 50 cts. E. E. PRESSLER, Williamsport, Pa.

THE ROOT CANADIAN HOUSE, 185 Wright Ave., Toronto, Ont., successors to the Chas. E. Hopper Co. Full line of Root's goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and other bee-journals; Prairie State incubators. Get the best. Catalog and price list free.

FOR SALE.—Several hundred eight-frame standard supers for 4¼ x 1½ sections, cheap. THE ROCKY MOUNTAIN BEE Co., Forsyth, Mont.

The Stanley improved cylinder cage with queen-cells, postpaid, 6 cts. each, or \$5.00 per 100. Write me for queen-breeders' supplies. ARTHUR STANLEY, 1907 Washington Blvd., Chicago, Ill.

EASTERN MICHIGAN beekeepers especially are invited to send for my catalog of Root's goods and specialties. Try me for satisfactory goods, prices, service. ARTHUR RATTRAY, Almont, Mich.

FOR SALE.—Medium-brood foundation. 1 to 10 lbs., 52 cts. per lb. Up to 25 lbs., 50 cts. Up to 50 lbs., 48 cts.; 100 lbs., 48 cts. prepaid in La. Root's goods for sale. Beeswax wanted; 26 cts. cash, 27 trade. J. F. ARCHDEKIN, Bordlonville, La.

PATENTS

PATENTS THAT PAY: \$600,812.00 clients made. Protect your idea! Send data. Advice and two wonderful Guide Books free. Highest reference. E. E. VROOMAN & Co., 834 F., Washington, D. C.

WANTS AND EXCHANGES

FOR EXCHANGE.—Four white Indian Runner ducks and one drake, show stock and winners, for two eight-frame hives of Italian bees. E. B. BROWN, box 323, White Plains, N. Y.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1916. Our catalog and price list will be mailed to you free. Order early and get the discounts. C. E. SHRIVER, Boise, Idaho.

REAL ESTATE

FOR SALE.—A 36-acre ranch, free irrigation water, five-room house, honey-house, and out-buildings, all practically new; good home orchard; 200 to 500 colonies of bees; two good locations. Time on part, for Sept. 15th delivery. J. G. PUETT, Collbran, Col.

VIRGINIA AND NORTH CAROLINA FARMS, \$15 per acre and up. Easy payments. Fruit, dairy, stock, climate, schools, churches, roads, markets, and neighbors of the best. Get our Farm Lists, Magazine, and other interesting literature, all free. Address F. H. LABAUME, Agr. Agt. N. & W. Ry., 246 N. & W. Bldg., Roanoke, Va.

A small farm in California will make you more money with less work. You will live longer and better. Delightful climate. Rich soil. Hospitable neighbors. Good roads, schools, and churches. Write for our San Joaquin Valley illustrated folders free. C. L. SEAGRAVES, Gen. Colonization Agent A. T. & S. F. R'y, 1934 R'y Exchange, Chicago.

BEEES AND QUEENS

Finest Italian queens. Send for booklet and price list. JAY SMITH, 1159 DeWolf St., Vincennes, Ind.

Italian queen-bees, \$1.00 each; tested, \$1.50. J. B. CASE, Port Orange, Fla.

Try my MAPLEWOOD queens. Sure to please. One dollar each. GEORGE H. REA, Reynoldsville, Pa.

Five three-banded Italian queens. Circular and price list free. J. L. LEATH, Corinth, Miss.

Golden-all-over queens of quality. Untested, 75 cts.; tested, \$1.50. A. O. HEINZEL, Rt. 3, Lincoln, Ill.

FOR SALE.—600 colonies well-kept bees. All modern equipment. Write WM. CRAVENS, Rt. 7, San Antonio, Tex.

FOR SALE.—Northern-Ontario-Bee-Diseaseless District Bees. Hardest, healthiest. Prices will suit you. RAHN BEE AND HONEY CO., Haileybury, Ont.

FOR SALE.—We offer to some one in this or nearby state, 50 to 300 colonies, 8-frame, first class. THE E. F. ATWATER CO., Meridian, Ida.

Vigorous, prolific Italian queens, \$1; 6, \$5. My circular gives best methods of introducing. A. V. SMALL, 2302 Agency Road, St. Joseph, Mo.

Northern-bred Italian queens of the E. E. Mott strain. June, untested, 90 cts.; July, 75 cts. Send for free list. EARL W. MOTT, Glenwood, Mich.

Ready to mail now. Tested Italian queens at 75 cts.; selected for \$1.00. JOHN KOENIG, 617 Monroe Ave., Evansville, Ind.

Bright Italian queens for sale at 50 cts. each. Safe arrival and satisfaction guaranteed. H. K. TURNER, Rt. 4, Greenville, Ala.

Leather-colored "Nutmeg strain" queens, \$1.00; \$10.00 per dozen. Tested, \$1.50. Special price on large lots by return mail. A. W. YATES, 3 Chapman St., Hartford, Ct.

FOR SALE.—1 lb. 3-band Italian bees. \$1.00; untested queen, 65 cts.; tested, \$1.00; select tested, \$1.25. Rosedale Apiaries. J. B. MARSHALL & SON, Big Bend, La.

Golden and three-banded Italians: 1 untested, 85 cts.; 6, \$4.80; 1 tested, \$1.25; 6, \$7.20. Satisfaction guaranteed. Bees, \$1.25 per lb. D. L. DUTCHER, Bennington, Mich.

H. C. Short, queen-breeder, formerly of Winchester, O., is now with W. D. Achord, Fitzpatrick, Ark. We will appreciate the patronage of Mr. Short's customers.

Now booking orders for three-frame nuclei, Italian bees and tested queen; delivery June 1, \$4 each. Low freight, quick delivery, satisfaction. S. G. CROCKER, JR., Roland Park, Md.

FOR SALE.—Bright Italian queens at 75 cts. each; \$7.50 per dozen or \$60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W. TALLEY, Rt. 4, Greenville, Ala.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5. WM. S. BARNETT, Barnetts, Va.

Golden Italian queens by June 1. Untested queens, 75 cts. each, or \$8.00 per dozen; tested, \$1.25 each or \$12 per doz. Purely mated. Guaranteed. Send for circular. J. I. DANIELSON, Rt. 7, Fairfield, Ia.

QUEENS OF QUALITY.—The genuine "quality" kind of dark Italians, bred for business. Untested queens by return mail, 75 cts. each; \$8.00 per doz. Circular. J. I. BANKS, Dowlletown, Tenn.

Golden Italian queens, select tested, \$1.25; tested, \$1.00; untested, 70 cts.; 12, \$8.00; select untested, 80 cts.; 12, \$9.00; untested, July, 10 cts. off each; \$1.00 per doz. off. No foul brood. D. T. GASTER, Rt. 2, Randleman, N. C.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; 6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00. J. B. BROCKWELL, Barnetts, Va.

Golden Italian queens, bred strictly for business, that produce a strong race as honey-gatherers. Untested queens, 75 cts. each; \$8.00 per dozen; \$60 per 100. Prompt service and satisfaction guaranteed. L. J. DUNN, box 338J, Rt. 6, San Jose, Cal.

Italian queens bred for their honey-gathering qualities. One, \$1.00; six, \$5.00. EDITH M. PHELPS, Binghamton, N. Y. East End.

FOR SALE.—Three-banded Italian queens, no disease. Tested, \$1.00; untested, 75 cts.; 6 for \$3.75. MISS BIRDIE CULBERSON, Rt. 2, Silver City, N. C.

Choice Italian queens, warranted, 75 cts. each. Tested, \$1.25; breeders, \$2.50 each; virgins, 40 cts. each; 3 for \$1.00. C. W. FINCH, Phone Haymarket 3384, 1451 Ogden Ave., Chicago, Ill.

GRAY CAUCASIANS.—Early breeders, great honey-gatherers; cap beautifully white; great comb-builders; very prolific; gentle; hardy; good winterers. Untested, \$1; select untested, \$1.25; tested, \$1.50; select tested, \$2.00. H. W. FULMER, Andalusia, Pa.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; one frame with queen, \$2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginner's outfit for stamp. THE DERBY TAYLOR CO., Newark, N. Y. (formerly Lyons).

My bright Italian queens will be ready to ship April 1, at 60 cts. each; virgin queens, 30 cts. Send for price list of queens, bees by the pound, and nucleus. Safe arrival and satisfaction guaranteed. M. BATES, Rt. 4, Greenville, Ala.

FOR SALE.—Fine Italian queens, three-banded; best that can be produced. Safe arrival and satisfaction guaranteed. Untested, 60 cts. each; 12, \$7.20; tested, \$1.00 each. J. F. ARCHDEKIN, Bordlonville, La.

Carniolan, golden, and three-banded Italian queens. Tested, \$1.00; untested, 75 cts.; 6, \$4.20; 12, \$7.80. ½-lb. bees, 75 cts.; 1 lb., \$1.25; nuclei, per frame, \$1.25. No disease; everything guaranteed. Write for price list. C. B. BANKSTON, Buffalo, Leon Co., Tex.

Indianola Apiary offers bees and queens for sale for 1916 as follows: Tested queens, \$1.25; untested, 75 cts.; 1 lb. of bees, \$1.00; one-frame nucleus, \$1.25. Add price of queen if wanted. J. W. SHERMAN, Valdosta, Ga.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SONS, Wilcox St., Binghamton, N. Y.

ITALIAN QUEENS.—For the balance of the season we will sell untested queens at 60 cts. each or \$6.50 per dozen; tested, \$1.00 each or 6 for \$5.00. Safe arrival and reasonable satisfaction. Address W. J. FOREHAND, Ft. Deposit, Ala.

QUEENS.—Improved three-banded Italians, bred for business, June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00; dozen, \$10.00; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Rt. 3, Williamstown, Ky.

Queens now ready. Golden and three-band Italian queens. I shall do my best to fill all orders promptly. If any queen fails to give satisfaction I will replace her free. Untested, 75 cts. each; six for \$4.00. Send all orders to E. A. SIMMONS, Greenville, Ala.

Queens by return mail, or your money back. Guaranteed purely mated three-banded Italians, Northern strain, bred for gentleness, honey-gathering, and wintering. Select untested, \$1.00 each; six for \$5.00. Select tested, \$1.75 each. Write for price on large orders. State inspector's certificate. Satisfaction guaranteed. J. M. GINGERICH, Kalona, Iowa.

Famous Howe's, Root's, Moore's, Davis' select strain of honey-gatherers, disease-resisting. None better for all purposes. Untested, one, 75 cts.; doz., \$7.50. Select untested, one, \$1.00; doz., \$9.00; ½ doz., \$5.00; tested, \$1.25; doz., \$10.00; select tested one, \$1.50; ½ doz., \$8.00; extra select, \$2.00. Bees by the pound, \$2.50 with queen. Honey crop short. Will have plenty of bees in June. H. B. MURRAY, Liberty, N. C.

Rhode Island Northern-bred Italian queens, \$1. Circular. O. E. TULIP, Arlington, R. I.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York.

QUEENS THAT COUNT.—See our Adv. elsewhere in this issue. GEO. W. PHILLIPS, Lebanon, Ohio.

Fine Italian queens by return mail. Select golden and three-banded, lined to select drones. Hardy, prolific honey-gatherers. Single queen, \$1.00; 2 queens, \$1.75; 3 queens, \$2.50; 12 queens, \$9.00. Six or more at dozen rates. No disease. Safe arrival. I positively guarantee every queen to give reasonable satisfaction.

CHAS. M. DARROW, Star Route, Milan, Mo.

ITALIAN QUEENS, Northern-bred, Three-banded, Highest Grade, Select Untested, Guaranteed. Queen and drone mothers are chosen from more than 600 colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, one, 80 cts.; 12, \$8.00; 100, \$55.00. Also bees by the pound. Send for circular.

J. H. HAUGHEY, Berrien Springs, Mich.

Hollopeter's strain of three-banded Italian bees and queens now ready. Bees, a full pound of the right kind for business, with young laying queens, 1 pkg., \$2.25; 6 pkg., \$12.50; 2-lb. pkg., with queen, \$3.25. Queens, bred for business, untested, each, 75 cts.; 12, \$8.00. Safe arrival in good condition guaranteed. Health certificate with each shipment. Circular free.

J. B. HOLLOPETER, queen-breeder, Pentz, Pa.

If you want a queen for that queenless colony, we can send it to you by return mail. Young tested queens, \$1.00, \$12.00 per dozen. Untested, \$1.00; \$9.00 per dozen. We breed the three-banded Italians only, and we breed for the best. Our thirty years of queen-rearing proves this. We never had a case of foul brood in our apiaries, and we guarantee every queen sent out by us.

J. W. K. SHAW & Co., Loreauville, La.

Carniolan, golden, and three-banded Italian queens. Tested, \$1.00 each; 6, \$5.40; untested, 75 cts. each; 6, \$4.20. Bees, 1 lb., \$1.25; 2 lbs., \$2.25. Nuclei, per frame, \$1.25; two-frame, \$2.25; eight-frame hive, \$6.50; ten-frame hive, \$7.00. Write for price on large orders. Everything guaranteed to reach you in good order. No disease here. Cash must accompany your order. Please mention GLEANINGS. I. N. BANKSTON, box 315, Buffalo, Tex.

Three-banded Italian queens guaranteed to please and to give results; 75 cts. each; 6 for \$4.25; 12 for \$8.00; 100 for \$65.00, in lots to suit; select breeders, \$5.00 each. One-pound swarm with fine queen, \$2.25 each; without queen, \$1.50 each. Write us your wants. We will give you a square deal. We are keeping up well with orders, getting them as we are. June will be the big bee month. Always give your express office when wanting pounds of bees. CURD WALKER, Queen-breeder, Jellico, Tenn.

LEATHER-COLORED ITALIANS.—Large, vigorous, three-banded Italian queens that have proven that they can stand a severe winter, last winter being a test for them. For size, beauty, gentleness, and honey-gathering qualities they will surprise you. If you have foul brood, try them. It will be half the fight. All queens are guaranteed for a period of one year from date received. If they fail to please you, you get your money back. Prices: 1, \$1.00; 6, \$5.00; 12, \$9.00. No foul brood in my apiary nor near me. W. D. SELLERS, 242 Pine St., Lancaster, Pa.

FOR SALE.—Three-banded Italian bees. Three-frame nuclei with queen, \$3.00; without queen, \$2.25. We have more bees than we can manage, and can therefore supply you with the biggest, strongest nuclei you will be able to find anywhere. Our bees are all on the standard-size Hoffman frames, combs built on full sheets of foundation, and on wired frames. We are now shipping nuclei, and can fill your orders promptly. Bees guaranteed to be free from disease.

HYDE BEE CO., Floresville, Tex.

ITALIAN QUEENS.—Golden or leather colored; 75 cts. each; \$4.25 for 6; \$8.00 per doz. Tested, \$1.50. NORDLING APAIRIES, Button Willow, Kern Co., Cal.

See our large advertisement elsewhere. Why pay more when you can get from us better queens for less money! We guarantee our queens to be as good as any produced North, South, East, or West. Try them. M. C. BERRY & Co., Hayneville, Ala.

FOR SALE.—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75 cts.; 6, \$4.25; 12, \$8.00; tested queens, \$1.25; 6, \$7.00; 12, \$12.00. For select queens add 25 cts. each to the above prices. For queens in quantity lots, or bees by the pound, write for prices. ROBT. B. SPICER, Rt. 181, Wharton, N.J.

TENNESSEE-BRED QUEENS! My three-band strain that has given such universal satisfaction for over 40 years. Orders filled promptly or money returned by first mail. 1000 nuclei in use. Tested, in June, \$1.75; untested, \$1.00; in July, \$1.50 and 75 cts. Postal brings circular.

JOHN M. DAVIS, Spring Hill, Tenn.

POULTRY

FOR SALE.—Fourteen thoroughbred Sicilian Buttercup hens and one rooster. First \$20 takes the lot. L. S. GRIGGS, 711 Avon St., Flint, Mich.

HELP WANTED

WANTED.—A single man to work 140 colonies of bees on shares; one with experience, and steady; good locality. J. J. WALKER, Rt. 5, Ogdensburg, N.Y.

MAN WANTED.—At once to work with bees. State age, experience, and wages. Three or four months' work. Address THE ROCKY MOUNTAIN BEE CO., Forsyth, Mont.

CONVENTION NOTICES

A field meet for the beekeepers of Southeastern Iowa will be held at the queen-rearing yard of J. I. Danielson, Fairfield, Iowa, July 27. All are urged to come.

EASTERN MASSACHUSETTS CONVENTION.

The regular monthly and annual meeting for election of officers, for the season, of the Eastern Massachusetts Society of Beekeepers, the original Massachusetts society, was held at room 15 Old South Building, Boston, on Saturday April 1, 1916.

The speaker of the day was Miss Dorothy Quincy Wright, of Lowell, who gave us an interesting talk on "Planning the season's work—efficiency methods applied to beekeeping."

The new president, who was unanimously elected, is Prof. Gladstone H. Cale, of the Essex County Agricultural School, at Hawthorne, Mass., who, upon taking the chair, thanked the members for the honor, and pledged his best efforts for the carrying-out of the work of the society.

Mr. Thomas J. Hawkins, 4 Emery St., Everett, the former president, was chosen secretary, and the Board of Directors are Rev. T. J. Horner, of Attleboro, Mass., chairman; Mrs. Susan M. Howard, of Stoneham, and Mr. Benjamin P. Sands, 1051 Old South Building, Boston.

THOMAS J. HAWKINS, Sec-treas.

The field meet of the Chicago-Northwestern Beekeepers' Association will be held at the home of W. W. Faulkner, 3000 N. Cicero Ave., Chicago, Ill., July 15, 1916.

Many things combine to make this an ideal place for a meeting of beekeepers. Besides being entertained by one of the most hospitable families in Illinois, we shall meet Mr. Faulkner, Sr., who is probably the oldest and one of the most successful bee-

keepers in the United States. Mr. Faulkner, Sr., is in his 100th year, and was born among the bees in Scotland. The family recently sold a large portion of their bee-range for over \$260,000. They still retain the buildings and ten acres of the best part of the farm, worth another \$50,000. The house stands on a ridge that was once the shore of Lake Chicago, which at one time covered the entire site of the present city. It can be reached by trolley from anywhere in the city for a five-cent fare. A basket dinner will be served by the queens that do not swarm, which we hope will attract enough drones to furnish an intellectual feast as well.

C. O. SMITH.

TRADE NOTES

SECOND-HAND FOUNDATION-MILL IN LOS ANGELES, CAL., FOR SALE.

We have for sale at our Los Angeles branch a 12-inch medium-brood mill in fair condition, with some defaced cells, but in good enough condition for years of service for a beekeeper who makes his own foundation. We offer the mill for \$15.00.

SWEET-CLOVER SEED.

We have several bargains to offer in sweet-clover seed. If interested, write us, stating the quantity you can use and the variety you prefer, and we will quote you and submit sample. We have some stock at Des Moines, Iowa, and Chicago, Ill., as well as Medina, and will quote bargain price to close out stock.

BUCKWHEAT FOR SEED.

The time is here for seeding buckwheat for a honey crop. We have here at Medina a limited supply of both Japanese and silverhull, which we offer at \$2.75 per 100 lbs., bag included, subject to previous sale. We can also furnish at the same price, and subject to sale, the Japanese variety from Ashland, Mo.

NO. 2 OR B GRADE SECTIONS.

Our surplus stock of B grade sections in the regular size, $4\frac{1}{4} \times 1\frac{1}{2}$, two beeway, is reduced to normal proportions. The new lumber on which we are now working is of excellent quality, and produces only a small proportion of B grade. We still have a good stock of B grade in plain sections of regular pattern; and as these are supplied this year at a reduction of 75 cts. per 1000 below A grade, they should be well worth using at this rate.

THE A. I. ROOT COMPANY, Medina, Ohio.

SPECIAL NOTICES

BY A. I. ROOT

GOOD BOOKS AT A GREAT BARGAIN.

Most of these books are old, but not all of them. They are offered at a bargain because they have accumulated, and do not seem to sell at the regular prices. First we have "Love: the Supreme Gift; or, the Greatest Thing in the World," by Henry Drummond. Some years ago this little book of 32 pages had a great sale, and created quite a stir in the world. The price was 10 cents. As we have 250 copies on hand, you may have one or more of them free of charge if you will send a stamp to pay the postage.

"The Revised Version of the New Testament." This was gotten out in 1881, when the New Version first appeared. It is a very pretty little book, printed with large type so old people can read it easily. It sold readily for 10 cents; present price 5 cents postpaid. We have about 300 copies.

In 1881, by request we made selections from the Home Papers, which had then been running for some six years. The original price was 10 cents. We have about 300 copies left, which you can have postpaid for 5 cents each. The book contains 48 pages, and includes gardening, poultry, and suggestions like those in several others of our books about what to do when out of work, and, first and last, more particularly, the kingdom of God and his righteousness. We have about 300 copies left, which we will furnish at 5 cents each as long as they last.

The next one is "Poultry for Pleasure and Poultry for Profit." This is a very pretty little poultry-

book with an illuminated cover. It has 48 pages and some very good illustrations. The price was 25 cents. We have some 20 copies left; and while they last you may have them postpaid for 10 cents. This little book ought to make any boy or girl happy who is getting interested in poultry.

"Silk and the Silkworm"—also 25 cents. It has 30 pages, illustrated. It will be sent by mail for 10 cents. We have 28 copies.

"Merrybanks and His Neighbor." This is a book of 210 pages, fully illustrated. This book is like our larger one ("What to do," etc.), written with the view of telling idle people what they may do to earn a living right around home. Nearly all the events mentioned in it are actual occurrences, but they were put in story form by A. I. Root over thirty years ago. The price was 25 cents; but you may now have it postpaid for 10 cents.

Here is another book—"The Story of Art Smith." I have made mention of it once or twice already. The book took such a hold on me that I could scarcely eat or sleep until I had finished it. The principal moral of the book is the account of how this boy, Art Smith, persevered and finally overcame more obstacles, accidents, and discouragements (mainly thru a lack of means) than any man or boy I ever heard of. The disappointments and disasters, it seems to me, would have set almost any other boy crazy; but, like Edison, he stuck to his hobby of making a flying-machine that would *actually fly*, until he finally conquered. The last I heard of him he was making flights in Japan. The boy had (and perhaps has yet) a praying mother. I hope the good woman is still alive. The price of the book is 25 cents; but as we have something like 80 copies left out of 100 we now offer it postpaid for only 10 cents.

"Injurious Insects of Michigan," by Prof. A. J. Cook. This book was first put out in 1874; and while improvements have been made in the way of insecticides, I believe this work of Prof. Cook stands with perhaps few exceptions as perfectly orthodox up to the present time. If I am correct, our good friend Cook was one of the pioneers in introducing the arsenite sprays for the destruction of the codling moth. The book contains 48 pages, and is abundantly illustrated. As we have 38 copies yet on hand we reduce the price, 25 cents, to only a nickel, for which we will send the book postpaid. It ought to be worth that amount to go over the early work of such an interesting writer as our old friend, who has done so much, not only for beekeepers but for the world at large.

Besides the books mentioned we have "What to Do, and How to be Happy While Doing it." This was a 50-cent book, bound in cloth; paper, 35 cts. We now offer it, bound in cloth, for 25 cents, and in paper for 15 cents. See A. I. Root's Special Notice, GLEANINGS for May 15.

We have also about 12 copies of the "New Agriculture," mentioned on the page referred to. This is really a valuable \$2.00 book, which we now offer for only 75 cts., because it is old. As long as the present copies last we will mail the book postpaid at the latter price.

THE 1915 YEAR-BOOK OF THE UNITED STATES BREWERS' ASSOCIATION.

The above is the title of a large book of 360 pages. It is put out by the United States Brewers' Association, and is gotten up without regard to cost, for the sole purpose of defending the brewing business. It is quite evident that they have spared no expense, and have employed the most able attorneys and men of all callings to help them to prove that the temperance wave is a mistake and a misrepresentation. It is not worth while to go over the arguments they present. It is quite evident, however, that they have, with much commendable study, looked up every "hook and crook" that would enable them to contradict or counteract the effect of the facts that temperance periodicals and temperance people are giving to the world. I will close this brief notice of the book by calling attention to a self-evident fact. The Anti-saloon League, our churches, our schools, our Endeavor societies, Sunday-schools, etc., are laboring for the sole purpose of protecting humanity, especially the boys and girls and the babies of the whole wide world. The brewers, on the contrary, are laboring and spending their millions for the "sole purpose" of holding their customers and keeping their breweries running so they can get more money from the unwary and unsuspecting.

SPECIAL BARGAINS

In rearranging our stock we find a number of items no longer listed in our catalog, which some of our readers may be glad to get at the bargain prices at which we offer them to reduce stock or close out entirely. We list a number of these specials on this page, and may add others later as these are disposed of.

HIVE-HANDLES.

We have a surplus stock of handhole cleats such as we formerly included with all dovetailed hives, and which have been listed at 75 cts. for 100, and will dispose of them to those who want them at 25 cts. per 100; \$2.00 per 1000.

OLD-STYLE DOVETAILED CHAFF HIVES WITH BOTTOM TO NAIL FAST.

Of these old-style chaff hives we have a number of eight-frame packed 5 in a package, which we offer to close out as follows: YW 5/8, one story, eight frames, 12 packages, five hives each, at \$8.00.

NO. 2 OR B GRADE HOFFMAN FRAMES.

In culling over the material cut into Hoffman frames, we find pieces with slight defects which we do not want to put into perfect stock, but which are usable, and too good to throw into the furnace for fuel. We have accumulated some stock of such frames, which are packed 100 in a box, and offer them at \$2.25 per 100; \$10.00 per 500. These are a bargain at the price, to one who is not too particular as to what he uses.

1½ H. P. SIXTY-SPEED ENGINE.

We have in stock two of the engines we formerly listed as sixty speed before adopting the Busy Bee engine. These are mounted on wheels, and have a counter shaft by means of which 60 different speeds can be obtained by the various changes of pulley sizes on the counter. This engine sold for \$60.00. We offer these to close out at \$45.00 each.

WHEELBARROW WHEELS.

We have a number of extra steel wheels for wheelbarrows, which we offer at a special price of \$1.25 each, or including a pair of springs with bearings, for \$2.00. These wheels are 20 inches in diameter, with 1½-inch tire, and solid cast hub holding spokes and axle in place. These wheels regularly sell at \$1.75, and springs at 50 cts. each.

SUPERS FOR EXTRACTING OR CHUNK HONEY.

We are offering, while they last, the following bargains in nailed supers for extracted honey. Some have been slightly used, and are in good condition. Prices f. o. b. Medina.

200 D9/10, nailed and painted, with top and bottom starters, nine frames in each, new. Sell new for \$1.20; offered at \$6.00 for 10; \$55.00 per 100.
180 8/10 supers, no paint. Sell new for 85 cts.; offered at \$4.50 per 10; \$40.00 per 100.

The first two lots are the 5½-inch supers with hanger cleats and shallow Danz. frames. The last lot are the same depth supers with shallow Hoffman frames hanging in rabbeted ends. Either style may be used for extracting or divisible brood-chambers. The price at which we offer them all nailed up is much below the regular price of same shipped in flat.

ALEXANDER FEEDERS FOR EIGHT-FRAME HIVES.

The Alexander feeder as we now make it is adapted to either eight or ten frame hives. Formerly we made a shorter length for the eight frame than for the ten-frame hive. In cleaning up old stock we find 300 of these eight-frame feeders which we offer, to close out, at half regular price—viz., 15 cts. each; \$1.35 for 10; \$11.00 per 100; \$30.00 for the lot.

TIN COMB-BUCKETS.

While these are listed in the catalog on one line at \$1.50 each, their convenience in carrying combs to the extractor shut up from robbers is not set forth. We have a surplus stock, and offer them, to reduce the number on hand, at \$1.25 each. You can place four Hoffman frames or five non-spaced frames of Langstroth size in each bucket.

JONES HONEY-KNIVES.

This is a form of honey-knife used largely in Canada, and preferred to the Bingham by those who have tried it. The blade is 1½ inches wide, and a flat V or triangular shape. We had a lot made to supply a call we had, and still have in stock 28 of them. We offer them at 75 cts. each. Mailed as a pound parcel when packed.

TUMBLERS HOLDING 6½ OZ., 40 DOZ. TO BARREL.

Having a surplus stock of honey-tumblers packed 40 dozen to barrel, including tin tops and wax-packed liners, we offer them for a short time, to reduce stock, at \$6.00 per barrel, or \$5.70 in 5-barrel lots, shipped direct from Medina.

SHIPPING-CASES FOR 12 AND 24 SECTIONS.

When we discontinued listing shipping-cases to hold 12 sections we still had quite a stock of various styles on hand, many of which are still in stock. We have also some of the older styles of cases for 24 sections of various sizes. We offer these various cases to close out at the following bargain prices. Here is an opportunity to lay in a stock of cases preparatory to the honey crop near at hand at very low prices. None of these cases, except as noted, are large enough to take sections with cartons or corrugated liners, except the bottom sheet. 12-lb. 2 or 3 row cases with 2 and 3 inch glass for the 4¼ x 1½, 4¼ x 1½, 4 x 5 x 1½ sections, packed 50 in a crate at \$4.00 a crate; packed 10 in a crate at 85 cts. a crate. A few crates of cases for 16 sections 4¼ x 1½ at \$4.50 per crate of 50 or 95 cts. per crate of 10. A few crates of cases for 24 sections 4¼ x 1½, and 4¼ x 1½, and 4 x 5 x 1½ at \$8.00 per crate of 50; \$4.00 per crate of 25, or \$1.70 per crate of 10. The 12-lb. safety cases, which we no longer list with safety cartons, and 2-inch glass for 4¼ x 1½, 4¼ x 1½; and 4 x 5 x 1½ sections, per crate of 10, \$1.20; per crate of 25, \$3.00. Without cartons, but including corrugated liners and glass, \$4.50 per crate of 50.

NO. 2 OR B GRADE SECTIONS.

We have a surplus stock of B grade sections in all the commonly used sizes and styles, and are behind on orders for No. 1 or A grade in some kinds. To insure prompt shipment it may be advisable to order B grades if you can use that grade. In beeway style the B grade costs 50 cts. per 1000 less than A grade, while in the plain or no-beeway styles the reduction for B grade is 75 cts. per 1000. The loss from unusable sections in B grade is very little more than in the A grade. Try them if you have not done so.

TOBACCO DUST FOR KILLING INSECTS.

Fine tobacco dust is used for dusting on lettuce and other plants for killing the insects, as well as for fertilizer. We have two kinds of dust—the very fine, from ground stems, which we offer at 20 cts. for 10 lbs.; \$1.50 per 100 lbs., or a case of about 400 lbs. at \$1.00 per 100 lbs. We can supply, also, a much coarser dust from leaves, which is much stronger, at 50 cts. per 10 lbs., \$3.50 per 100 lbs.

FOR SALE.—1910 Model 4-cylinder 30 H. P. Reo, run only 15,000 miles, in fine condition. Is of racing type, with gasoline tank in rear, two-seated, no fenders. Gas lamps, no starter. Tires in good condition. Ideal car for running out to outyards and carrying light loads. \$200.00.

THE A. I. ROOT COMPANY, MEDINA, OHIO.

Quality Quickly

There's the reason why we maintain two western branches and warehouses. The convenience of lower freight and prompter shipments, coupled with the excellence of our bee supplies, have been realized by western honey-producers.

It is unnecessary to talk here about the type of supplies carried in stock at these two distributing points.

The Proof of Quality

Ourexhibit at thePanama-California Exposition was awarded a grand prize and a gold medal.

This is California's
Decision

The A. I. Root Co., Los Angeles, Cal.

Geo. L. Emerson, Manager, 948 East Second St.

Where the Weed foundation-machines are making perfect non-sag foundation. Send us your wax to be made into foundation. We buy wax too.

Root Redwood Hives.—A sample hive body with cover and bottom KD, \$1.00. Quantity prices on application. We cut hive parts to order.

New machinery for manufacturing hives and frames has been added. Extractors are now shipped "knocked-down" from the factory at Medina.

The A. I. Root Co., San Francisco, Cal.

245 Mission Street

We have moved. Office and warehouse in the same building.
Write for catalog and send us your list of wants.

The Eyes, Ears, and Mouth are Near Together

To see birds, hear their
music, and taste honey
are a happy trio. . . .

There is a new and enlarged
Bird Department
in the
Guide to Nature

Send twenty-five cents for a four-
months' trial subscription.

Address: ARCADIA, Sound Beach, Conn.

Where are You Located?

IN OHIO?—Then your orders will naturally gravitate to Zanesville, the Bee-supply Capital of the state.

IN WEST VIRGINIA?—The large supply-house nearest to most beekeepers in this state is at Zanesville.

IN WESTERN PENNSYLVANIA? — You are a next-door neighbor.

ELSEWHERE?—Zanesville service will yet commend itself to you as being the best obtainable.

The leading line of bee supplies, unsurpassed shipping facilities, years of experience, and painstaking care in packing and forwarding goods, fair and considerate treatment, all insure a degree of satisfaction that can scarcely be duplicated elsewhere.

If exasperating delays or otherwise unsatisfactory service have been your past experience, give us a chance to demonstrate the superiority of the service we offer.

Ask for our free illustrated catalog.

E. W. Peirce,
22 So. Third St. Zanesville, Ohio
Distributor for the largest bee-supply
factory in the world

Be Efficient in BEE CULTURE

Grasp the experience of others in beekeeping by reading the best that has been published. The pamphlets and books listed below compel interest. Place a X in the margin opposite the publication wanted.

- ☐ **THE DEVELOPMENT OF THE APPLE FROM THE FLOWER.** By O. M. Osborne. Here's the latest scientific information about why apple blossoms can not do without bees. Free.
- ☐ **MY FIRST SEASON'S EXPERIENCE WITH THE HONEYBEE.** By "The Spectator," of the *Outlook*. A leaflet humorously detailing the satisfaction of beekeeping. Free.
- ☐ **CATALOG OF BEEKEEPERS' SUPPLIES.** Our new complete catalog, mailed free to any address on request.
- ☐ **THE BEEKEEPER AND FRUIT-GROWER.** Do you know that bees are necessary in modern fruit culture? This 15-page booklet tells how beekeeping is doubly profitable to the fruit-grower. Free.
- ☐ **SPRING MANAGEMENT OF BEES.** The experience of some successful beekeepers on solving this perplexing problem. Price 10 cents.
- ☐ **THE USE OF HONEY IN COOKING.** Just the thing for the up-to-date housewife. Price 10 cents.
- ☐ **BEEES AND POULTRY,** how they work together profitably for others—why not for you? Some valuable pointers on hens and honeybees. Free.
- ☐ **HOW TO KEEP BEES.** A book of 228 pages detailing in a most interesting manner the experiences of a beginner in such a way as to help other beginners. Price \$1.00 postpaid.
- ☐ **THE A B C OF BEE CULTURE.** A standard encyclopedia on bees. The largest and most complete published anywhere. 712 pages, fully illustrated. \$2.00 postpaid.
- ☐ **WINTERING BEES.** A digest of all the information on the subject. Thoroughly modern and practical. Price 10 cts.
- ☐ **THE BUCKEYE HIVE,** or the management of bees in double-walled hives. Will interest the amateur especially. Illustrated. Price 10 cents.
- ☐ **SWEET CLOVER,** the all-around forage crop. Just off the press. Investigate this astonishing plant. Free.
- ☐ **ADVANCED BEE CULTURE.** A summary of the best ideas of experts in apiculture. The book is beautifully printed and bound. 205 pages. Cloth. \$1.00 postpaid.

Be sure that the following coupon is carefully filled out.

The A. I. Root Company, Medina, Ohio.
Please send me the items checked above.

I enclose \$.....to cover the cost.

Name

Street Address or R. F. D.

Town

State

HONEY - CANS

We have made especial efforts this season to supply our patrons with cans and cases of the finest quality, and we have now in our warehouse a complete stock ready for immediate shipment to you.

There is much satisfaction in knowing that there is a dependable source of supply so near to all Texas Beekeepers, and others in the great Southwest. Experience has taught us to anticipate properly the needs of our patrons, and we have as yet failed to fall down at a critical time. Sometimes we feel that it is not wise for Beekeepers to trust entirely to the supply house for eleventh-hour assistance, but we concentrate our energies, nevertheless, on complete preparation, and when you are ready we are. Write us for prices.

Weed's New Process Comb Foundation

We have made extensive improvements in our comb-foundation factory this season at a great expense, and are now operating day and night under the supervision of a man direct from the A. I. Root Company, who has had many years of experience in the manufacture of this product. When placing your order with us you are assured of receiving Comb Foundation of unexcelled quality.

A full line of Root's Beekeepers' Supplies on hand at all times ready for immediate shipment.

Toepperwein & Mayfield Co.

Nolan and Cherry Sts.

San Antonio, Texas